APRIL '58

MODERN TEXTILES MAGAZINE

Specializing in Man-Made Fibers and Blends since 1925

FIBERS

FABRICS

FINISHES

ACMI's new president — HALBERT JONES of Waverly Mills and Morgan-Jones — Story page 36

THIS MONTH'S SPECIAL FEATURES

Extra yarns in fabric decoration
Using Univac in fabric development
New techniques for dyeing Acrilan
The future of non-woven fabrics
AND 12 MORE TIMELY ARTICLES AND EXCLUSIVE REPORTS

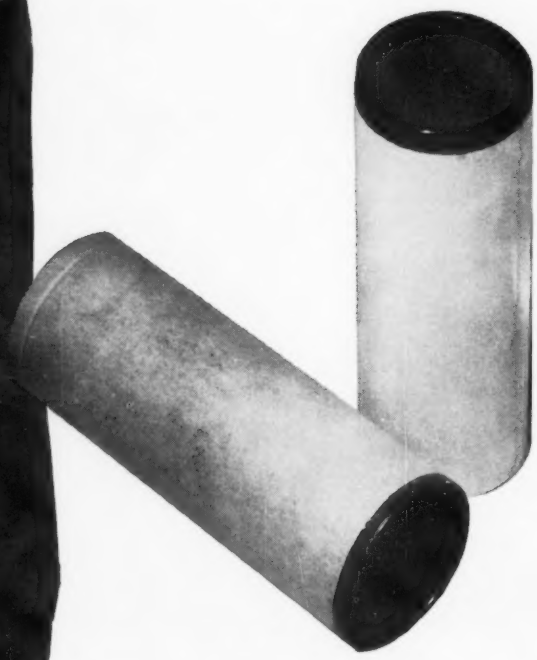
Peak Performance

ALWAYS . . . ALL WAYS WITH SONOCO PRODUCTS!

To develop a product that delivers peak performance in production, research is a "must" . . . and SONOCO does it!

For example, SONOCO up-twister, or creeling, tubes are made for top operational efficiency on your machines. They are job-engineered to meet the requirements of balance, take-off and other yarn carrier functions in winding, twisting and creeling.

Every SONOCO product is backed by nearly 60 years of experience in the development of paper carriers to serve the industry with maximum efficiency and economy. For you, the use of SONOCO-researched products mean more profitable production!



MAIN OFFICE — HARTSVILLE, S. C.

- MYSTIC, CONN.
- LOWELL, MASS.
- LONGVIEW, TEXAS
- LA PUENTE, CAL.
- AKRON, IND.
- PHILLIPSBURG, N. J.
- PHILADELPHIA, PA.
- ATLANTA, GA.
- GRANBY, QUEBEC
- BRANTFORD, ONT.
- MEXICO, D. F.

SONOCO

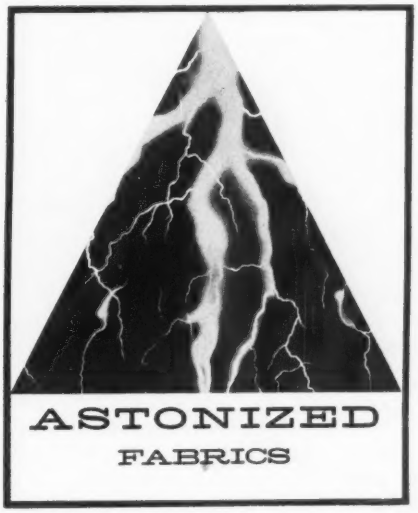
Products for Textiles

SONOCO PRODUCTS COMPANY

1306

NOW ALL

SYNTHETICS AND BLENDS CAN BE TAGGED FOR COMFORT



ASTON is the only *wash-durable* anti-static finish for *all* man-made fibers. Finished with static-freeing ASTON, synthetic fabrics

- repel lint and dust!
- absorb moisture, dispel heat!
- never cling or ride up!

. . .yet retain every advantage of synthetics.

TAGGED FOR SAFETY: the ASTONIZED® tag on work and hospital clothing assures anti-static protection for the life of the garment. Workers can now enjoy comfort and protection on the job!

For more information about this most advertisable, promotable finish, call Phil MacLean, ONYX OIL & CHEMICAL COMPANY today—COrtland 7-9383.

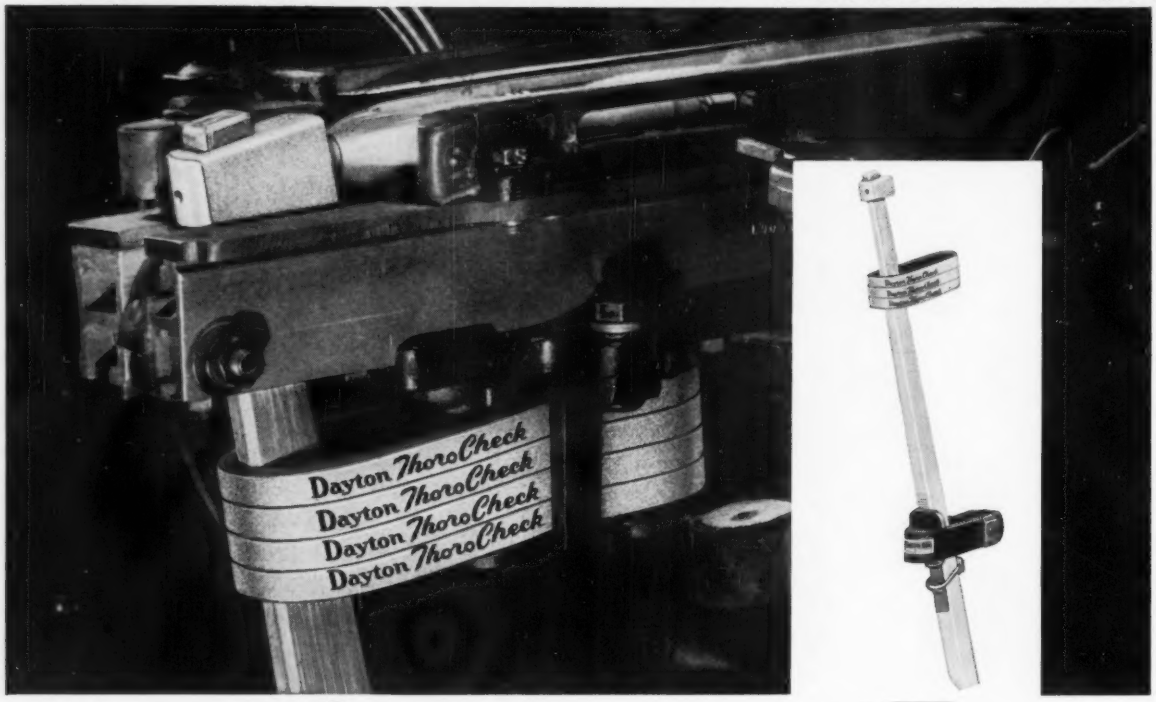
Hook Your Sales to a Rising Star such as these Aston Licensees have done:

Burlington Finishing Company ● Burlington Industrial Fabrics Co. ● Fontaine Converting Works ● Lyman Printing & Finishing Co. ● North Carolina Finishing Company

ask the man from Onyx

ONYX CHEMICALS
Jersey City 2, N. J.

PROTECT YOUR LOOMS from Shock and Wear with the DAYTON COMBINATION



Designed to work together as a smooth running combination, Dayton Loop Pickers, ThoroCheck Straps and Lug Straps absorb the shock of high speed shuttles, smoothly check the picker stick, and accurately deliver the shuttle return. Lasting 2 or 3 times longer than similar products, the Dayton Picking Combination reduces both the cost of replacing parts and the downtime it takes to make repair.

DAYTON THOROBRED LOOP PICKERS... the tilt of the picker face is just right for perfect, strain-free shuttle contact . . . the tapered picker stick hole insures accurate seating and protects against tearing the loop ply . . . and the smooth, round corners prevent jerked-in fillings . . . all add up to millions more wear-free contacts.

DAYTON ENDLESS THOROCHECK STRAPS have a superior checking action and stronger multi-ply construction that adds 6-8 months more of trouble-free service. Because of their smooth, graduated checking action Dayton ThoroCheck Straps never drag over the stick, never interfere with the shuttle throw.

DAYTON THOROBRED DELUXE LUG STRAPS are molded together around a built-in plug that absorbs the terrific shock generated during picker stick thrusts. One-piece, link-free construction means longer service, greater protection for the stick and loom.

© D.R. 1958

Check the results yourself by refitting some of your looms with the complete Dayton combination and comparing its long life, freedom from downtime, and smoother picking action. Just ask your Dayton representative next time he calls or write The Dayton Rubber Company, Textile Div., 401 S. C. National Bank Building, Greenville, S. C.

Dayton And Thorobred Textile Products
For Better Spinning And Weaving

Dayton Rubber

MODERN
TEXTILES MAGAZINE

April, 1958 Vol. 39, No. 4

Modern Textiles Magazine
Established 1925

* * *

Published Monthly by
Rayon Publishing Corporation
303 Fifth Ave., New York 16, N. Y.
MUrray Hill 4-0455

* * *

Francis A. Adams ..... *Chairman of the Board*
Alfred H. McCollough ..... *President*
Harvey J. Williams ..... *Vice President*
John E. D. Coffey ..... *Vice President*
Harries A. Mumma ..... *Treasurer and Secretary*

* * *

Alfred H. McCollough ..... *Publisher*
Jerome Campbell ..... *Editor*
H. George Janner ..... *Managing Editor*
Robert C. Shook ..... *Contributing Editor*
B. Mori ..... *Contributing Editor*
Joseph Fallat ..... *Art Direction*
Harvey J. Williams ..... *Business Manager*
R. A. Lipscomb ..... *Business Representative*
C. E. Peck, Jr. ..... *Business Representative*
Gordon B. Ewing ..... *Business Representative*
Stanley A. Ehresman ..... *Circulation Manager*
I. A. Price ..... *Asst. Circulation Manager*

* * *

Subscription Rates: North and South America and U. S. Possessions, one year $5.00; all other countries, one year, $8.00. Postage prepaid by the publisher. Single copies (current issue), 60 cents.

BPA

Member of
Business Publications Audit of Circulation, Inc.

Entered as second-class matter at the Post Office, Manchester, N. H. Editorial and Circulation offices at 303 Fifth Avenue, New York 16, N. Y. Publication offices at 215 Canal Street, Manchester, N. H.

(Originally entered as second-class matter at the Post Office, New York, N. Y. August 20, 1925).

* * *

Contents copyright 1958 by Rayon Publishing Corporation. All rights reserved. Articles may be reprinted with the written permission of the publisher, if credit is given to Modern Textiles Magazine.

* Registered U.S. Pat. Office.

CONTENTS

Publisher's Viewpoint:

The Fiber Labeling Bill—A Sad Waste of Effort 33

Features

Big Growth seen for Non-Wovens 35
by Stephen I. Rudo

Jones of Waverly Mills 36
by Jerome Campbell

How to Use Extra Yarn in Designing 38
by Victor Lobl

New Techniques in Dyeing Acrilan 54
by Walter H. Hindle

AATT Papers

Statistical Methods in Fabric Development 67
by F. J. Evans, W. T. Holfeld and H. J. Kolb

Discussion 73

The Principal Trade Groups

Man-Made Fiber Producers Association ..... Empire State Bldg., New York
National Federation of Textiles, Inc. ..... 389 Fifth Ave., New York
American Association of Textile Chemists and Colorists ..... Lowell Techn. Inst., Lowell, Mass.
American Association for Textile Technology, Inc. ..... 100 W. 55th St., New York
Silk and Rayon Printers and Dyers Ass'n of America, Inc. ..... 1450 Broadway, New York
Synthetic Organic Chemical Manufacturers Association ..... 41 F. 42nd St., New York
Textile Distributors Institute, Inc. ..... 469 Seventh Ave., New York
American Rayon Institute ..... 350 Fifth Avenue, New York

Departments

Outlook in Textile Marketing 34
Report from Europe 58
New Fabrics—New Yarns 60, 64, 76
New Machinery—New Equipment 62
TDI News and Comment 65
Report from Japan—B. Mori 66
Textile News Briefs 78
Dyeing Notes 79
Yarn Prices 81
Calendar of Coming Events 96
Advertisers Index 96

Marketing Conference, May 6-7

A textile market research conference will be held at the Hotel Statler, New York City, on May 6–7, by the National Cotton Council. Specific opportunities for textiles will be pinpointed in the sessions. Progress in the effort to boost sales of textile products also will be reviewed.

Participants in the conference, the second such event to be sponsored by the Cotton Council, will include representatives of firms producing and processing textile fibers; textile merchandisers; trade associations; chemical suppliers to the textile industry; government agencies and other groups. *For further information about the conference, write the editors.*

Nylon Tires Pushed

Chemstrand Corp. has started an advertising and merchandising campaign to boost sales of nylon cord tires. Chemstrand executives recently disclosed the program to tire industry leaders in Akron, Ohio. A survey showed, they said, that drivers are willing to pay more for a tire that is safer and more durable; that nylon is by far the best-known fiber for tire, cord, and 91% of 2,000 drivers surveyed know of nylon as opposed to 72% for rayon.

The campaign is based on advertising in magazines and trade publications, and Chemstrand sponsorship of TV programs. Among these are the CBS television "Playhouse 90", which is viewed each week by about 21,000,000 people. On April 25, Chemstrand will launch a new television show on the NBC network, "Jefferson Drum." To back up its nylon program Chemstrand will provide sales promotion materials for tire dealers tieing in directly with the television shows.

Stevens Sees Shift to Rayon

Rayons goods may benefit from the shortage of good grades of cotton and resulting high prices for cotton fabrics, according to Robert T. Stevens, J. P. Stevens & Co. president. At a recent meeting of the New York Society of Security Analysts, Stevens also pointed out there was an increasing use of rayons for industrial purposes. The textile executive believes that woolens will maintain their present percentage of the market in 1958 but that cottons and synthetics are capable of considerable expansion.

Gordon Research Conference

The Gordon Research Conference on textiles this year will be held at Colby Junior College, New London, N. H., July 7–11, with Emery I. Valko as chairman and Leonard Smith as vice chairman. The program includes: July 7—H. Mark on polymers, and Norman J. Abbott and Freddy Khoury on tension changes during wetting and drying; July 8—W. A. Sisson on viscose rayons, and R. E. Seaman and J. C. Shivers on elastic textile fibers; July 9—C. M. Conrad on cotton, and Helmut Zahn on wool chemistry; July 10—A. A. Burgeni and E. V. Painter on movement of fluids in fibrous beds, and F. W. Minor, L. C. Buckles, E. Wulkow and A. M. Schwartz on transport of liquids in textile assemblies, and July 11—C. Schlatter, mechanism of fiber and yarn lubrication.

Requests for attendance at the Conferences, or for any additional information, should be addressed to W. George Parks, University of Rhode Island, Kingston, R. I. From June 9 to August 29, 1958 mail should be addressed to Colby Junior College, New London, N. H.

The word for rayon

HARTFORD

the symbol of dependability

Count on Hartford for a wide range of the finest rayon fiber staple. Count on Hartford for on-time service . . . a thoroughly dependable source of supply.

- Solution-dyed heavy denier crimped rayon staple KOLORBON†
- White heavy denier crimped rayon staple . . . . VISCALON 66†
- White heavy denier "smooth" rayon staple . . . VISCALON 44
- White fine denier regular rayon staple . . . . . VISCALON 22

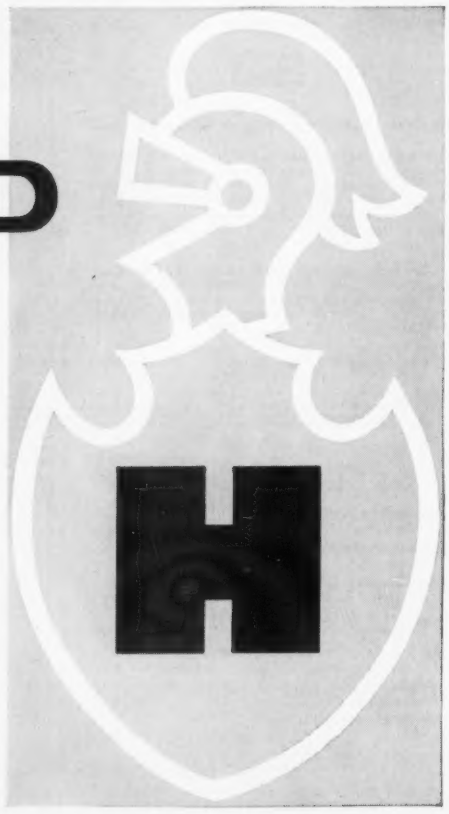
†Available in both 3" and 6" lengths

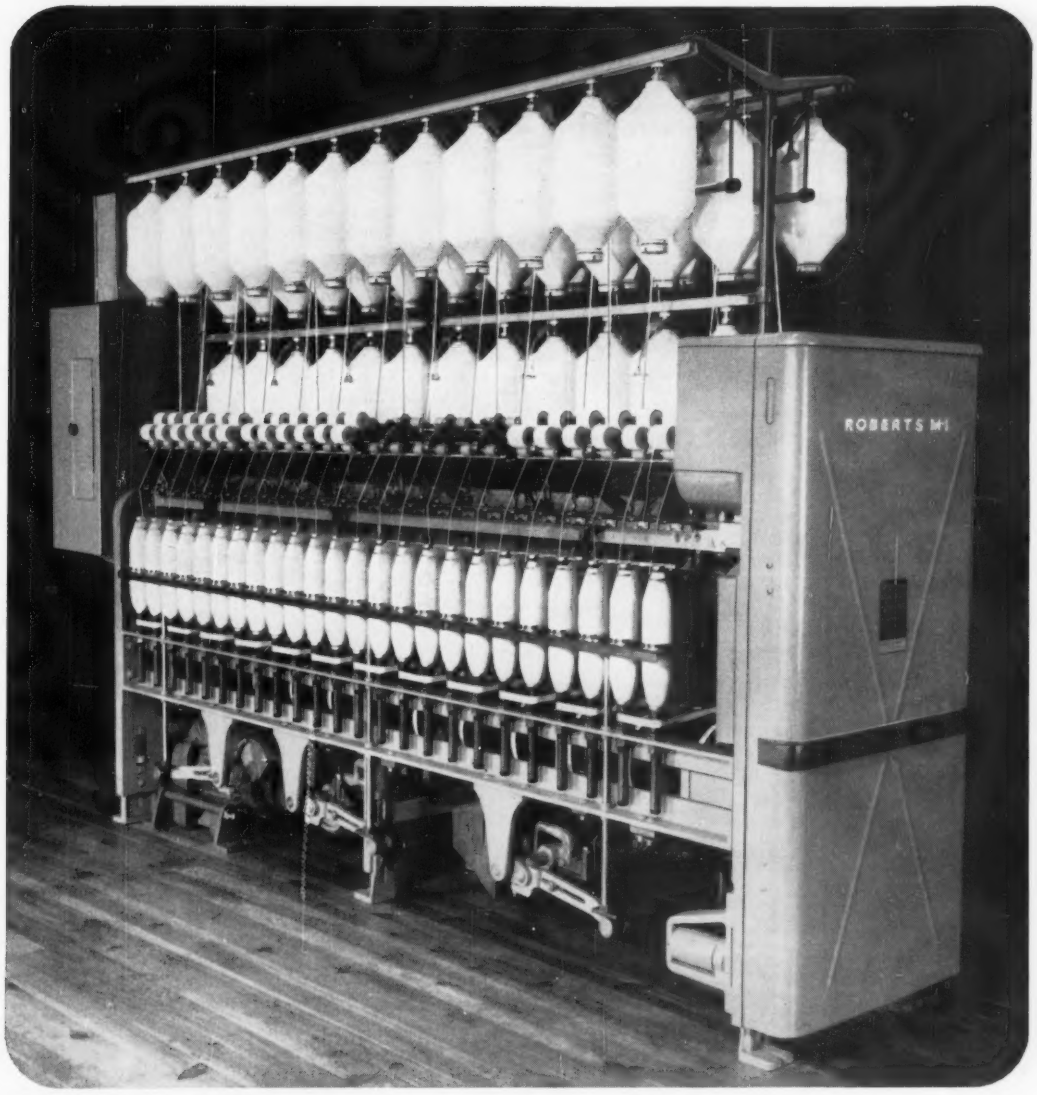
HARTFORD RAYON COMPANY

136 Madison Avenue, New York City

Southern Sales Office: Atlanta, Georgia

The country's leading producer of solution-dyed rayon staple





ROBERTS SPINNING

ALL NEW—ALL BALL BEARING ROBERTS M-1 SPINNING FRAME

MODERN IN DESIGN

Into the rugged simplicity of the Roberts M-1 chassis has been built all the ball bearing features needed to provide the smooth operation and productivity for today's and tomorrow's production goals. Standard features include:

- BALL BEARING TOP ROLL SUSPENSION
- BALLOON CONTROL ARRANGEMENT
- BUILT-IN UnitVac SUCTION CLEANING
- EXTRA CAPACITY SPINDLES
- FULL BALL BEARING HEAD
- UMBRELLA CREEL
- 45 DEGREE ROLL STANDS
- STEEL BASE RAILS, ROLL BEAMS, RING RAILS
- ADJUSTABLE DRAFT CONSTANT, 500 TO 3000
- TURNKEY ERECTION AND STARTUP

PROVEN IN PERFORMANCE

New Roberts Spinning has been running in the mill since February 1956 and has proven itself not only most economical in initial cost but low in maintenance. One large user with more than 150 frames in continuous production reports that the new Roberts Spinning runs with higher front roll speeds, better yarn quality and substantially lower ends down than the several thousand frames of other makes in operation in their mills.

ROBERTS COMPANY

SANFORD, NORTH CAROLINA

Celanese Launches Promotion

Celanese Corp. at a recent New York style clinic for fashion designers as a start of the company's "Who Is She" Fall promotion, introduced a panel formed of suburban housewives. Celanese feels that its story on contemporary fibers adaptable to easy living can be best defined by what these women like and desire in clothes that are right for their way of life. Results of this round table, the first of a series which also will include Dallas and California markets, will form the nucleus of the company's Fall fashion promotion. For retailers and other interested trade people, Celanese has available its "Who Is She" booklet with attractively presented facts and figures supporting this 1958 fabric and fashion promotion. *For copies, write the editors.*

New Dacron under Test

Du Pont is evaluating an experimental type of Dacron polyester fiber in staple. Designated as type 64, it is being appraised by a limited number of mills. The new staple is expected to be of interest primarily to worsted manufacturers since it promises to make possible the production of a wider range of worsted fabric types. Commercial production of type 64 Dacron is contingent on the final appraisal.

New Glass Yarn Plant

Pittsburgh Plate Glass Co. has started construction of its new fiber glass plant at Shelby, N. C. The plant will have 16 glass furnaces capable of producing 25 million pounds annually in all types of continuous yarn. Pittsburgh Plate Glass entered the fiber glass field in 1951 with a plant at Shelbyville, Ind. now undergoing expansion.

U. S. Cotton Policy Hit

The decline in textile employment in Alabama last year can be blamed directly on the Government's policies on cotton and on imports, according to Fred M. Lyon, president of the Alabama Textile Manufacturers Association. Some 2,900 textile workers in that state lost their jobs in 1957. Lyon warned that unless the situation is corrected, the downtrend in textile employment may continue.

Lyon, president of Opp and Micolas Cotton Mills, criticized Government policy for its reduction of U. S. cotton acreage to 14 million acres from 46 million acres. He also condemned Government sales of American cotton to foreign consumers at six cents a pound less than the U. S. will sell to U. S. consumers.

Polyester Plant in Puerto Rico

Beaunit Mills Inc. will construct the first synthetic fiber plant in Puerto Rico, a multi-million dollar facility with an annual capacity of 10,000,000 pounds of polymer staple fiber including tow and yarn spun from tow. I. Rogosin, Beaunit president, said initial production is scheduled for June, 1959, with output to be sold in Puerto Rico and the continental U. S. Used alone or blended with natural or other synthetics, the fiber will be made into shirts, suitings, dresses, underwear and related products.

According to Rogosin, the new fiber will be a polyester made from polyester resins supplied by Goodyear Tire & Rubber Co. Goodyear recently began construction of a $9 million plant at Apple Grove, West Virginia, to make polyester resins and film.

Use HEANIUM®

WITHSTANDS HI-SPEED PRESSURE OF SYNTHETIC YARNS

HEANIUM Q240-2 Guides for Ring Twisters are ideal for processing not only glass yarn, but rayon, spun rayon, nylon, wool, cotton and combination yarns—HEANIUM Guides are designed to eliminate production problems encountered by manufacturers in synthetic textile fields.

MOH's hardness _____ 9.5

If guide wear is a problem in your mill . . . try Heanium® IS THE BEST GUIDE TO LOW COSTS.

OTHER STANDARD SIZES AVAILABLE

Test samples of HEANIUM stock Guides will be furnished without charge.

ADDRESS SAMPLE REQUEST TO DEPT. 9
HEANY INDUSTRIAL CERAMIC CORP.
NEW HAVEN 3, CONNECTICUT

HEANY INDUSTRIAL CERAMIC CORP.

9 forms to fit your needs in

SOLVAY CAUSTIC SODA

. . . and all include Solvay extra services

To help you use Solvay Caustic Soda most *efficiently*, we make 9 forms. To supply it *rapidly* and *dependably*, we produce it in 5 widely-scattered plants. To aid you in applying it most *effectively*, we provide technical service and literature based on extensive field work with users and painstaking laboratory research.

SOLVAY®

Sodium Nitrite • Potassium Carbonate • Chlorine
Caustic Soda • Calcium Chloride • Caustic Potash
Sodium Bicarbonate • Ammonium Chloride • Vinyl
Chloride • Chloroform • Methylene Chloride • Methyl
Chloride • Para-dichlorobenzene • Cleaning Compounds
Hydrogen Peroxide • Aluminum Chloride • Ammonium Bicarbonate • Soda
Ash • Carbon Tetrachloride • Monochlorobenzene • Ortho-dichlorobenzene
Mutual Chromium Chemicals • Snowflake® Crystals

SOLVAY dealers and branch offices are located in major centers from coast to coast.

Allied Chemical

SOLVAY PROCESS DIVISION
ALLIED CHEMICAL & DYE CORPORATION
61 Broadway, New York 6, N. Y.

BJ-4

Please send without cost Solvay Caustic Soda sample or samples and literature as follows:

☐ 76% powdered ☐ 76% solid ☐ 76% ground ☐ 76% flake
☐ 76% small flake ☐ 50% liquor ☐ 73% liquor ☐ 50% mercury cell liquor ☐ 73% mercury cell liquor
☐ Technical Bulletin No. 6, "Caustic Soda"
☐ Wall chart of handling precautions

Name_____

Position_____

Company_____

Phone_____

Address_____

City_____ Zone_____ State_____

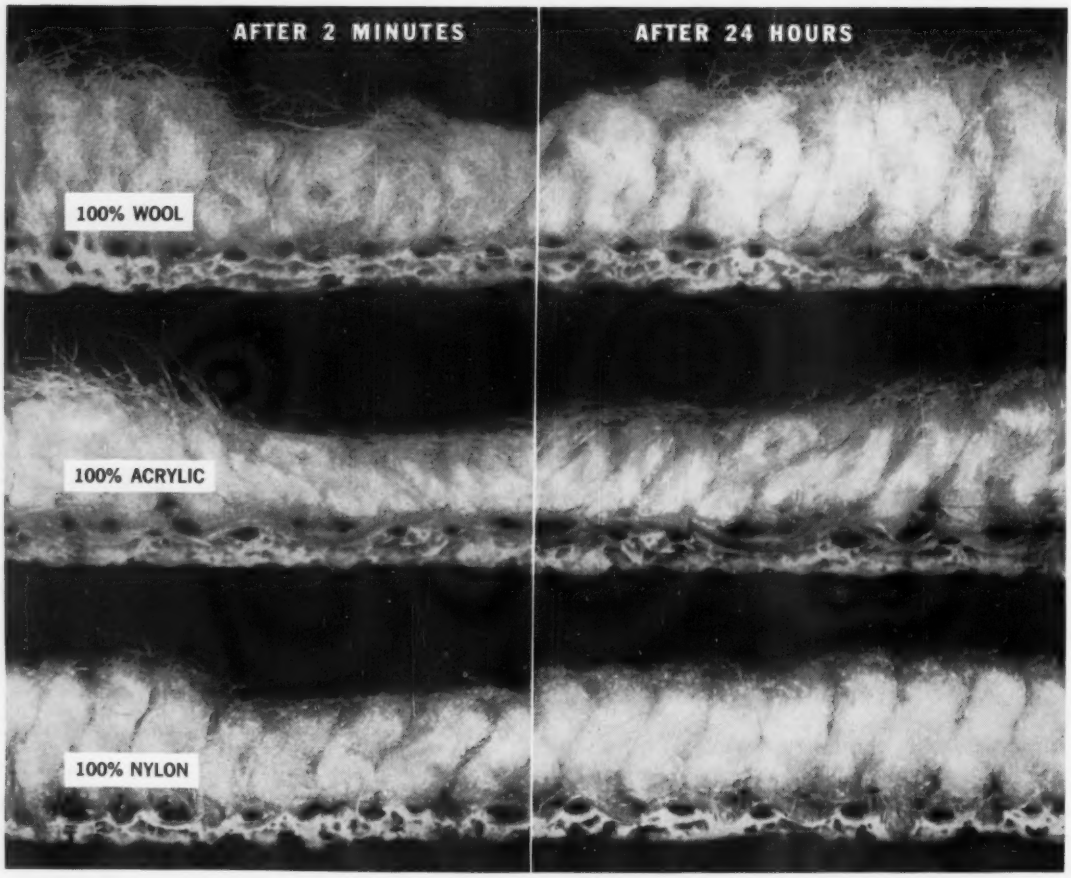
tests prove nylon has superb recovery from crush

Two separate and distinct tests are shown here. Within each test, identical carpets (except for fiber content) were subjected to a concentrated weight of 25 pounds per square inch pressure. This is comparable to the weight of a standard sofa. Photos were taken 2 minutes after removal of load and again 24 hours later.

Although wool and the acrylic start recovery more quickly, they *do not recover as completely as nylon after 24 hours.*

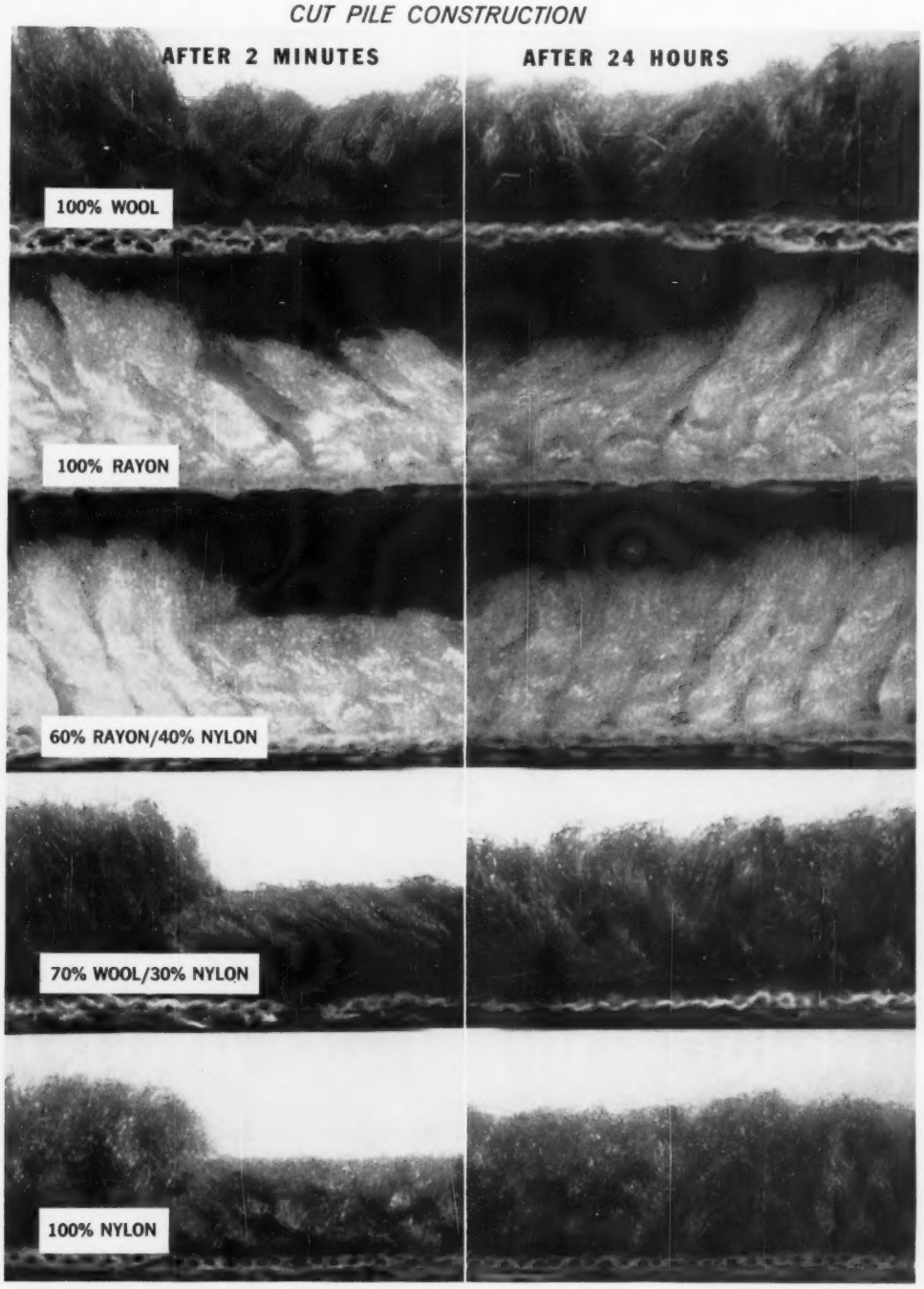
TEST NO. 1...NYLON COMPARED WITH WOOL AND ACRYLIC

LOOP PILE CONSTRUCTION



TEST NO. 2 . . . NYLON COMPARED WITH WOOL AND WITH RAYON

CUT PILE CONSTRUCTION

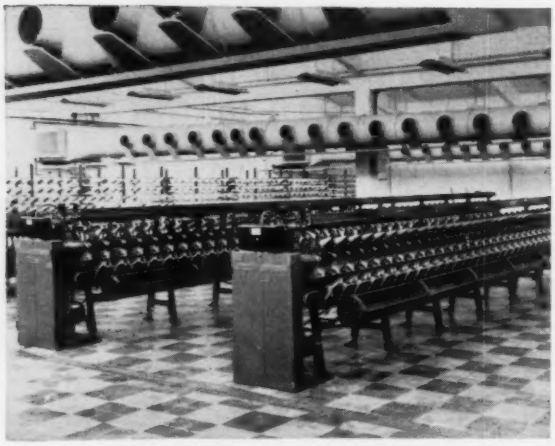


THE NEW Nylon Staple

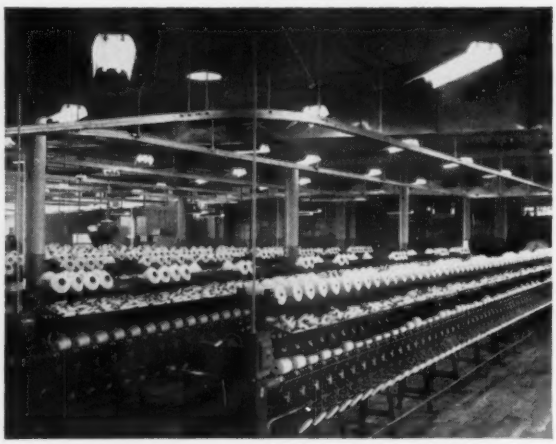
I·R·C

INDUSTRIAL RAYON CORPORATION,
500 Fifth Avenue, New York 36, New York · 627 Guilford Building, Greensboro, North Carolina

Leesona ROTO-CONER®
—the winding way around the world

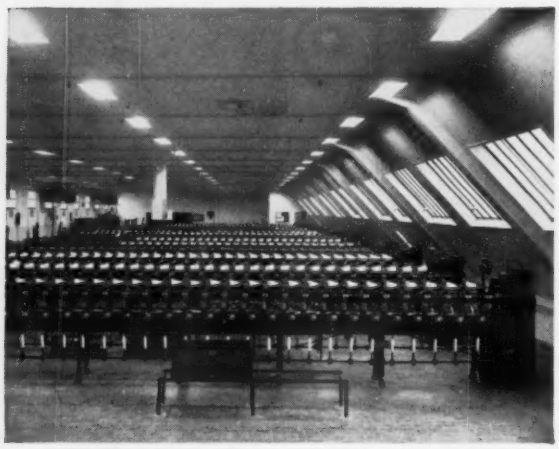


URUGUAY — Roto-Coners set up to wind onto paper cones. Machines are equipped with round bobbin boxes.



U. S. A. — Roto-Coners winding parallel tubes on one side, cones on the other.

GREAT BRITAIN — Roto-Coners winding open-wind knitting cones.



FRANCE — Roto-Coners coning 100s — 120s cotton yarn.

Every textile manufacturing country in the world uses Leesona Roto-Coners in quantity.

These quiet, trouble-free drum winders produce every type of open-wind package. They wind onto paper tubes and cones for shipment or knitting . . . onto cork-covered, wood cones for warper creels . . . onto perforated tubes and springs for dyeing . . . onto wood tubes and cones for twisting.

Around the world they wind cottons . . . spun synthetic staples . . . wools . . . worsteds . . . linens . . . blends.

The exclusive *Rotary Traverse* on these machines eliminates all moving parts connected with reciprocating guides — permits high speed, reduces maintenance, and assures uniform packages and top quality yarn.

For facts and figures on why these versatile, dependable machines are popular around the world, write for the illustrated Leesona Roto-Coner booklet.

23.6.14

UNIVERSAL WINDING COMPANY

P. O. BOX 1605, PROVIDENCE 1, R. I.

Sales Offices: Boston • Philadelphia • Utica • Charlotte • Atlanta • Los Angeles
Montreal • Hamilton, Canada

Agents in every principal textile center throughout the world.

Though the name, CUPIONI®, was associated with 24,000,000 garments in 1957...

remember CUPIONI® is our property!

MILLIONS UPON MILLIONS of tags and labels in garments and on piece goods feature the name, Cupioni.

But . . . the use of the name is a privilege, not a right. American Bemberg consents to the use of Cupioni upon two conditions:

1. The merchandise must meet the required minimum specifications for Cupioni — as delineated in our "Cupioni Specification" booklet, furnished free of charge.
2. The name must be used properly and identified as a registered trade-mark of American Bemberg — as described in our free booklet: "The Proper Way to Use Our Trade-Mark, Cupioni."

Before featuring Cupioni in tags, labels, or advertising, write for the two free booklets . . . be sure you are complying with the rules. Unauthorized or illegal usage will be vigorously opposed.

Bemberg®
ARISTOCRAT OF RAYON YARN

"CUPIONI" IS AMERICAN BEMBERG'S REGISTERED TRADE MARK FOR CUPRAMMONIUM RAYON YARN

AMERICAN BEMBERG • Main Office: 261 Fifth Avenue, New York 16, N. Y. • Plant: Elizabethton, Tennessee.

No. 5 in a series—how your Du Pont salesman is backed by many sales-building activities including Fiber Research, Technical Service, Fabric Development and Merchandising.
mothers' opinions of
boys wash-and-wear
slacks and outer jackets
consumer survey by
Du Pont
marketing research

Marketing research stops guesswork

Here's Dan Colyer, of our Marketing Research Section, presenting the results of a national survey to Gardner Mackinnon, Merchandise Manager, and Charles Chrenko, Boys' Wear Buyer, of Frederick Atkins, Inc.

An important part of Du Pont's Market Research activity is consumer surveys. Their purpose is to (1) define the true potential for our fibers in specific markets; (2) determine effective ways of appealing to consumers. This information is then passed on to interested elements of the textile industry to help them capitalize on opportunities uncovered.

An example is the one being presented in the above photo. Its objective was to determine the consumer appeal of Du Pont fibers in boys' wash and wear slacks and outer jackets and to determine the most effective sales points to use in merchandising this apparel to mothers.

To find the answers, two 3-hour panel sessions were held with 10 mothers who had one or more boys 7-14 years old. From these sessions came a

FROM RAW FIBERS TO RETAIL SALES . . .

—accentuates selling

questionnaire aimed at finding out mothers' attitudes, motives and purchasing desires in regard to their boys' clothing. This questionnaire was then sent to a national sample of mothers by the Home Testing Institute. One thousand returns were received, tabulated and interpreted.

Among the facts revealed by this survey Du Pont learned—*and is making available* to mills, manufacturers, retailers—that 71% of mothers preferred wash and wear slacks to washable or drycleanable ones. Thus market and selling potentials were defined through factual measurements—providing opportunities for more intelligent planning.

Du Pont believes it can increase the market for its fibers and thus benefit its customers by providing useful assistance to all levels of the textile industry. It's through your Du Pont sales representative that you, as a customer, have access to a range of technical and merchandising information unique in the textile industry.

Product and Process Notes from Du Pont

Dyeing "Dacron"*/Cotton by Continuous Process—The thermosal process for the continuous dyeing of "Dacron" is gaining wider trade acceptance as larger volumes of blends of "Dacron"/cotton are produced. Combined with continuous vat dyeing of the cotton, dyeings of unexcelled fastness can be obtained at speeds comparable to other continuous methods.

Ondulé Rayon—Ondulé, a new continuous filament rayon yarn containing randomly spaced, entangled slubs, is now available in 250, 450 and 2200 deniers. The slubs in Ondulé impart to fabrics an unusual resemblance to certain types of silk. This new yarn is expected to become important in draperies, casements, suitings and bedspreads.

Sewing-Machine Adjustments—A machine adjustment technique has been developed to provide optimum sewability with threads of Du Pont fibers. The step-by-step, easy-to-follow procedure, which reduces thread breakage and seam puckering, has resulted in significant improvement in sewability as demonstrated on plant equipment. Threads of cotton or Du Pont fibers can be used interchangeably on machines which are so adjusted. This improvement in tailoring technique should broaden new market possibilities for fabrics containing Du Pont fibers.

Technical Information Bulletins—These bulletins contain detailed, practical information on Du Pont product and process developments. They cover fiber properties, mill processing, dyeing, finishing and fabrication. Refer to your copies frequently; they can save you time and money. To be sure you have all the bulletins you need—check with your Du Pont salesman or Technical Service representative.

*Du Pont's registered trademark for its polyester fiber.

Enjoy the "Du Pont Show of the Month"—on CBS-TV

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

DU PONT BUILDS PROFITS FOR YOU

Clear sparkling colors produced with more economical dyestuffs are among the advantages assured by use of TEN-O-FILM Starches.

For a clear size that enhances **COLOR** use **TEN-O-FILM®** starches

For use with the new quick curing or polymerizing resins, you'll find no equal to TEN-O-FILM Starches.

Available in a range of fluidities to meet any required fabric stiffness, these unique starches retain their free-flowing characteristics at the lower temperatures employed in finishing.

Also, because both sizing and desizing operations using TEN-O-FILM are conducted at lower temperatures, with "bleeding" thereby reduced, yarns can be dyed with more economical dyestuffs.

More information? Just contact our nearest sales office or write to:

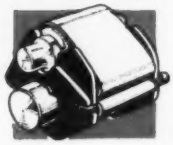
CORN PRODUCTS SALES COMPANY
17 Battery Place, New York 4, N. Y.

Corn Products makes these famous starches for the TEXTILE INDUSTRY:
EAGLE® · FOXHEAD® · GLOBE® · CLARO® · TEN-O-FILM® · GLOBE® Dextrines

Whitin Spinning Changeovers

A recent installation of Whitin Spinning Changeovers

. . . the *SMART* way to stay COMPETITIVE



The Whitin 2-apron drafting system with over 12,000,000 spindles sold, has become an industry byword; its performance has created standards by which other systems are judged. Today's Whitin SUPER-DRAFT® which is now available as a Changeover on standard spinning frames, provides you not only with superb fiber control but also will operate on drafts up to 50 (or even higher) with no loss in yarn strength or quality.

While applying Whitin Super-Draft Changeovers, more and more mills grasp the opportunity to equip their frames with UNITROL,® Whitin's distinctive top arm weighting system. Unitrol supplements the performance of the Super-Draft system by insuring accurate, uniform weighting on all rolls while supplying Whitin antifriction front top rolls and non-lubricated middle and back rolls.

Mills using this combination of changeover units are enjoying such direct spinning benefits as reductions of 20 to 30% in end breakage and 30 to 40% in cleaning costs coupled with improved production per operator.

Call your Whitin Sales Engineer today! Ask him to look over your mill situation—he'll appreciate the opportunity of showing you how Whitin Spinning Changeovers can help you to stay competitive — the smart way.

Buy "competition insurance"- BUY WHITIN!

Whitin MACHINE WORKS

WHITINSVILLE, MASSACHUSETTS

CHARLOTTE, N. C. • GREENSBORO, N. C. • ATLANTA, GA. • SPARTANBURG, S. C. • DEXTER, ME.

DISSOLVING WOOD CELLULOSE

"Acetacell" *"Novocell"*

"Plasticell" *"Filmcell"*

"Tenacell"

For the manufacture of Rayon and Acetate Textile Yarns, High Tenacity Tire Cords, Staple Fibres, Transparent Films, Plastics and other cellulose derivatives.

Quality — Uniformity — Reliability

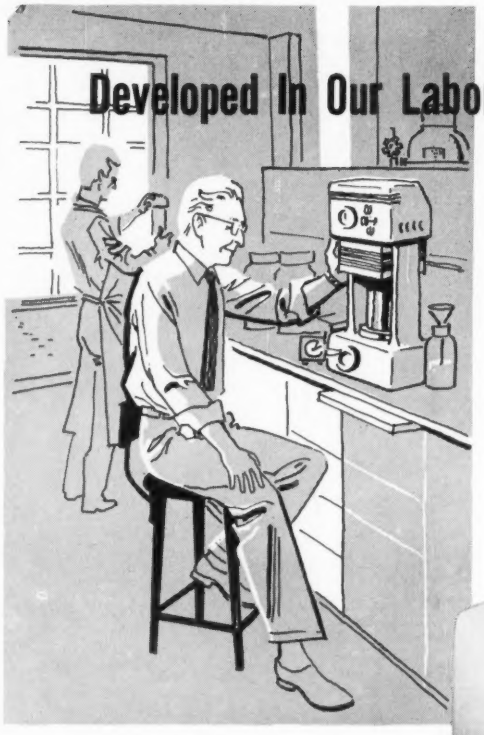
RIORDON

SALES CORPORATION LIMITED

SUN LIFE BUILDING MONTREAL, QUE., CANADA

AND

220 EAST 42nd ST. NEW YORK, N. Y., U. S. A.

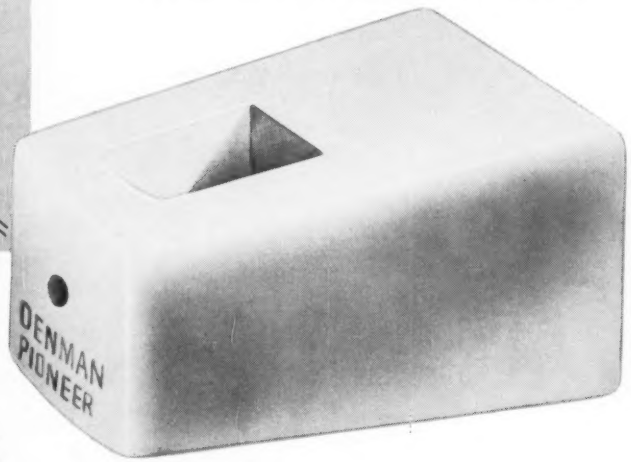


Developed In Our Laboratories... *All New*

Pioneer

BY DENMAN®

PREMIUM
LIGHT-COLORED PICKERS



GIVES UP TO
15% BETTER,
LONGER SERVICE!
...WILL NOT STREAK
OR MARK!

From our own Pioneer laboratories comes this sparkling new light-colored picker. Developed of an exclusive new compound of greater strength and durability to give up to 15 % longer wear! Will not streak or mark light fabrics! Tested and proven for top quality and smooth, dependable performance!

Write for more information and TEST KIT complete with performance record card without charge or obligation on your company letterhead.

TRY IT
WITHOUT CHARGE!
WRITE FOR PIONEER PREMIUM LIGHT-COLORED PICKER **TEST KIT NOW!**

OR SEE YOUR DENMAN SALES AGENT

The Karl H. Inderfurth Co., Inc., P.O. Box 6161, Charlotte, N.C.
John P. Norman, P.O. Box 445, West Point, Ga.
Texplant Corporation, 695 Summer Street, Stamford, Conn.
Albert R. Breen, 80 E. Jackson Blvd., Chicago 4, Ill.
L. O. Talley, P.O. Box 1169, Mexia, Texas

Denman®

A Subsidiary of

THE McCANDLESS CORPORATION

2828 Second Street • Cuyahoga Falls, Ohio

Multicolored limonite with red iron ore. Potosi, Bolivia

CIBA

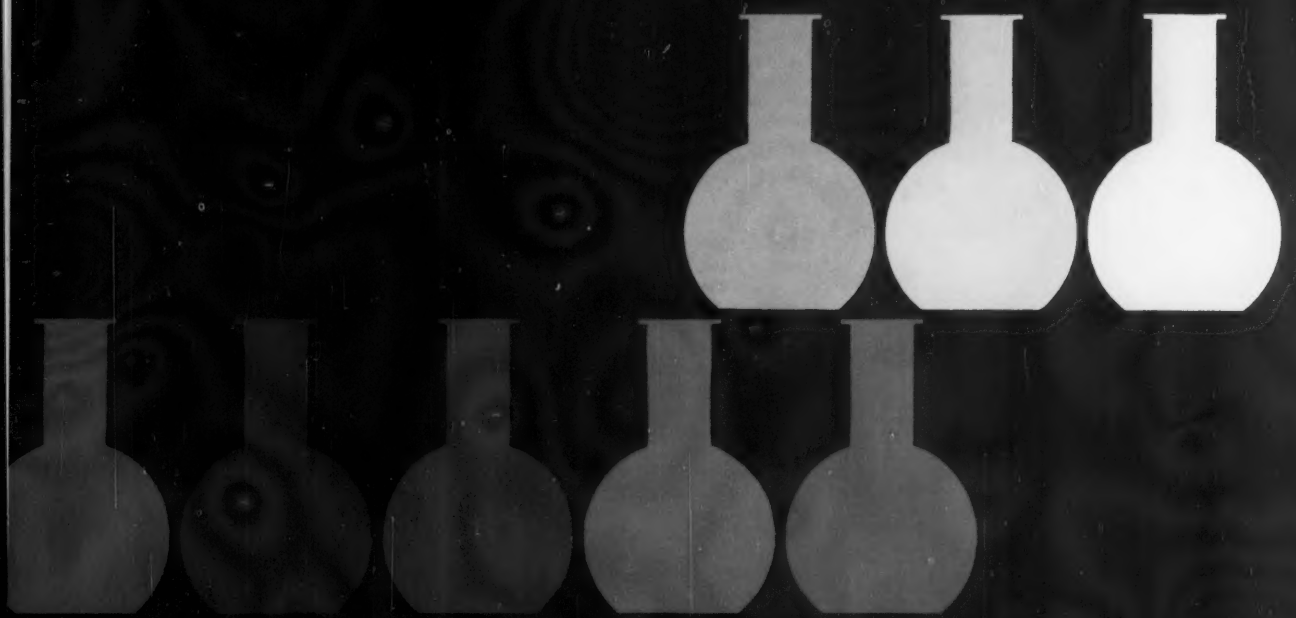
Cibacron®

New opportunities for fabric design . . . the dyer . . . and the fashion stylist! The Cibacron reactive dyes present excitingly beautiful colors of outstanding fastness, applied simply.

Dyes of the Cibacron range are applied by padding, exhaust dyeing and printing procedures. Three simple steps are involved: (1) dyeing, (2) fixation and (3) soaping and rinsing.

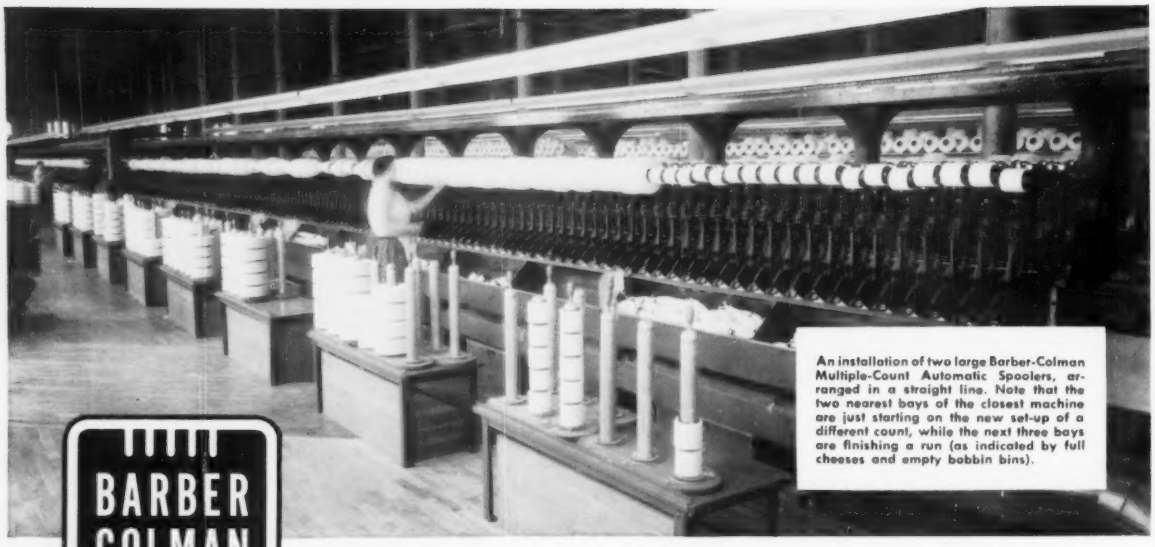
Cibacron padding methods are versatile and give excellent results. Newly developed exhaust dyeing procedures yield brilliant shades on rawstock, yarns and knitted or woven fabrics. A range of goods from sheers to blends to carpeting are dyeable as never before.

Textile prints with Cibacron dyes have a soft finish and do not look dull or painted. The process is flexible, permitting continuous steaming, a short aging or dry fixation without aging.



Cibacron dyes are novel, with uniquely beautiful, fast shades on cotton, rayon and other fibers. Brilliant, fascinating and bound to the fiber by chemical reaction—Cibacron colors in dyeings and prints are breath-takingly different and long wearing. Their luminescent beauty adds new possibilities to fashion designing. Eight fast self colors provide an extraordinary range of brilliant shades.

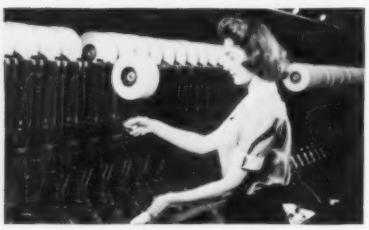
CIBA Company Inc.,
627 Greenwich Street, New York 14, N. Y.



An installation of two large Barber-Colman Multiple-Count Automatic Spoolers, arranged in a straight line. Note that the two nearest bays of the closest machine are just starting on the new set-up of a different count, while the next three bays are finishing a run (as indicated by full cheeses and empty bobbin bins).

BARBER COLMAN

Multiple-Count Automatic Spooler



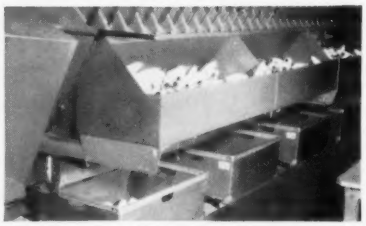
Spooler tender loading a full bobbin into the Spooler. The bobbin is dropped into a "pocket," and the yarn end is slipped into a spring clamp which positions it properly for the knotter to pick up.

Yarn man moving a trident of full cheeses from operator's table to a creel truck. He also returns tridents of starters, removes boxes of empty bobbins, and keeps full-bobbin bins supplied. Boxes under operator's tables are for tailings, and cheeses to be rewound.

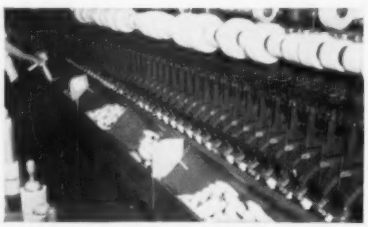
Sale yarn mills and producers of piece goods that use various counts or different mixtures will find that this machine can be a very profitable investment. It is still the famous and the very familiar Barber-Colman Automatic Spooler, but with this difference: now you can wind . . .

A DIFFERENT COUNT EVERY NINE UNITS

The machine is built in "bays" between uprights that support the traveler track, with nine bobbin-to-cheese winding units on each side of each bay. Empty bobbins, instead of being conveyed to a single sorting table, drop into separate boxes under each bay, thus enabling each group of nine units to be used for a different yarn count. Individual operator tables service each bay. The only limitation is that the extremes of different counts on the machine at any one time must fall within the range of the knotter in the traveler. Yarn or count changes can, of course, be readily made at any time, and any number of bays can be run on identical yarns.



A close-up of the full-bobbin supply bins which are fixed to the machine, one bin for each nine winding units. The removable empty-bobbin boxes are shown on the floor below, also arranged so there is one box for each nine units. Note box location guides.



A close-up of several full-bobbin bins showing how dividers can be used to mark off separate runs. Labels tell contents.

AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP TYING MACHINES • WARP DRAWING MACHINES

BARBER-COLMAN COMPANY

ROCKFORD • ILLINOIS • U. S. A.

FRAMINGHAM, MASS., U. S. A. — GREENVILLE, S. C., U.S.A. — MANCHESTER, ENGLAND — MUNICH, GERMANY

INDIA	MEXICO	BRAZIL	JAPAN	PAKISTAN	PAKISTAN
Batliboi & Company Forbes Street, Fort Bombay, India	J. Rabasa Isabel la Catolica 45-913 Apartado 7348 Mexico D.F., Mexico	Industria e Comercio de Maquinas S. A. Avenida Rio Branco No. 50, Rooms 1201/3 P. O. Box No. 63 Rio de Janeiro, Brazil	Do-Yei Shoji Kabushiki Kaisha Atlas Building (7th Floor) 11, Bingo-machi, 3-chome, Higashi-ku, Osaka, Japan	Associated Agencies (M'cr.) Ltd. Piccadilly House 11 Piccadilly Manchester 1, England	Associated Agencies (M'cr.) Ltd. 27 Kothari Building Napier Road Karachi 2, Pakistan

TEST RESULTS PROVE:

the good word in girdles

is ACETATE

The facts are in. Three months of special testing prove acetate gives *performance* plus beauty to girdle panels.

For ninety days acetate and rayon panel girdles—selected from existing lines—were consumer tested. Each garment was washed and worn an equal number of times. THE ACETATE GARMENTS SHOWED LESS PUCKER, NO ABRASION, AND OUTLASTED THE POWER NET OF THE GARMENT.

Shown at left is an acetate warp jacquard by Rosenstein Bros.—typical of the rich constructions possible with acetate. Its white resists yellowing and graying. It dries quickly. It looks good for the life of the garment.

Let us show what has been done and can be done with acetate. Today.

Celanese Corporation of America, Textile Sales Division, Charlotte, North Carolina.

Celanese®

District Sales Offices:

180 Madison Ave.
New York 16, N. Y.

Room 10-141 Merchandise
Mart, Chicago 54, Illinois

P. O. Box 1414
Charlotte 1, N. C.

200 Boylston St.
Chestnut Hill 67, Mass.

819 Santee St., Los Angeles, California

Export

Amcel Co., Inc. and
Pan Amcel Co., Inc.

180 Madison Ave.
New York 16, N. Y.

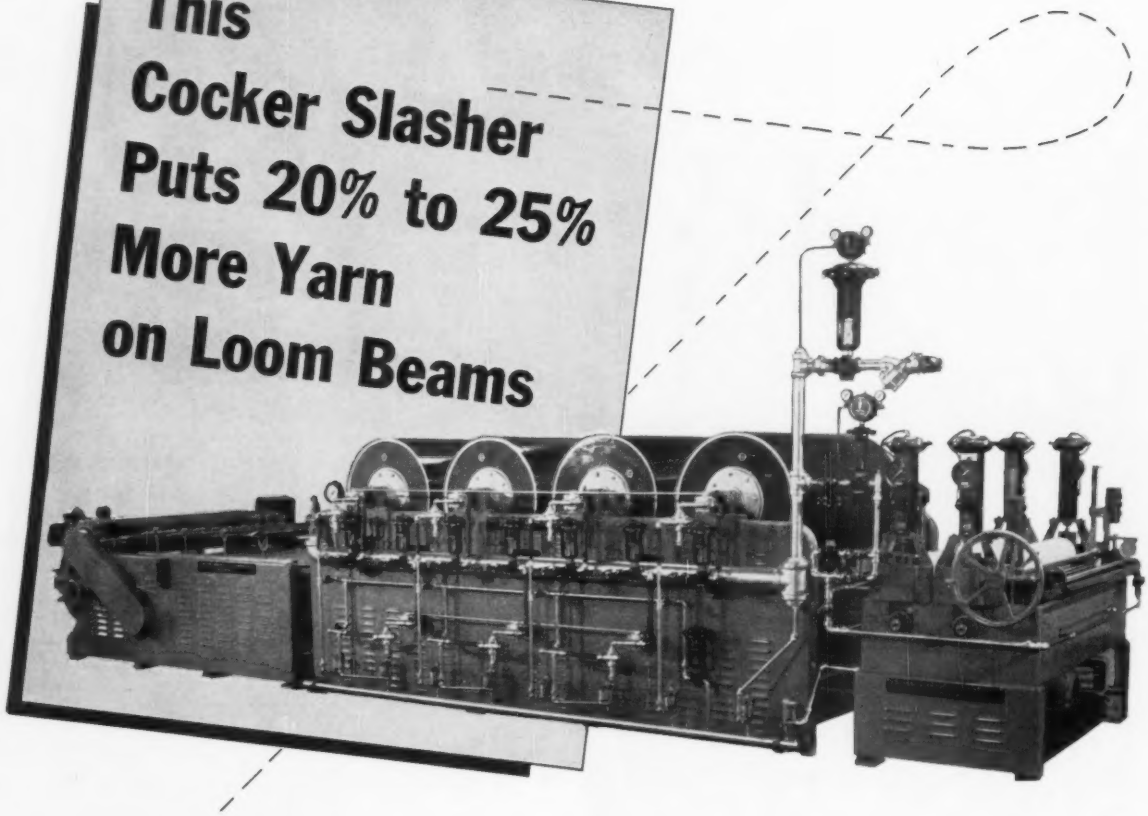
In Canada

Chemcell, Canadian
Chemical & Cellulose Co., Ltd.

2035 Guy St.
Montreal

...a Celanese contemporary fiber

This Cocker Slasher Puts 20% to 25% More Yarn on Loom Beams



. . . Available with the Cocker Compensating Beam Drive (2 motor or 4 motor) to produce hard, even beams with 20% to 25% more yarn per loom beam — at sustained speeds of 150 yards per minute at a production rate of over 1400 lbs. per hour. Air operated ironing compressor roll with finger tip pressure control, and variable D. C. Drive maintain even pressure and tension at all times.

All operations are under push button control at all times, with indicators to show how the work is running. Air operated carrier and delivery rolls and many other features make this the most efficient and convenient slasher you can buy.

Cocker slashers will handle all types of yarns. Built with 5 to 13 cylinders up to 144" in width. Call on Cocker for full information or engineering service.

THE LEADER AROUND THE WORLD

COCKER

Plant and Offices at Ranlo, N. C. (Mailing address, Gastonia, N. C.)

Machine and Foundry Co., Gastonia, N. C.

WORLD'S LARGEST DESIGNERS AND BUILDERS OF COMPLETE WARP PREPARATORY EQUIPMENT

CARPETS, THROW RUGS, CHILDREN'S WEAR, BLANKETS, SEPARATES AND DRESSES, COATS, SHIRTS, ROBES, SLACKS AND SPORTS COATS, ON-THE-JOB CLOTHES...WHATEVER THE END USE...

IT'S BETTER WITH ACRILAN®

From Mill to Mrs., the steady flow all along the distribution pipeline obviously depends on acceptance of the end product.

Toward such acceptance, Acrilan is currently making fiber history . . . being responsible, among other successes, for a wash & wear jersey that has revived a tremendous new fashion interest in this fabric . . . for a blanket whose luxury and machine-washability has made it the best seller in its field . . . for a new kind of carpet with a resilience never before achieved.

Similarly, to all the products headlined above, Acrilan, the acrylic fiber by Chemstrand, has added performance values that have given quick, widespread consumer acceptance. On the record, the case for Acrilan in your mill is a mighty strong one.

THE CHEMSTRAND CORPORATION • GENERAL SALES OFFICES: 350 FIFTH AVE., NEW YORK 1, N.Y.

DISTRICT SALES OFFICES: 350 Fifth Ave., New York 1; 3½ Overwood Rd., Akron, Ohio; 197 First Ave., Needham Heights, Mass.; 129 West Trade St., Charlotte, N. C. Canadian Agency: Fawcett & Co., 34 High Park Blvd., Toronto, Canada • PLANTS: ACRILAN® ACRYLIC FIBER—Decatur, Ala.; CHEMSTRAND® NYLON—Pensacola, Fla.

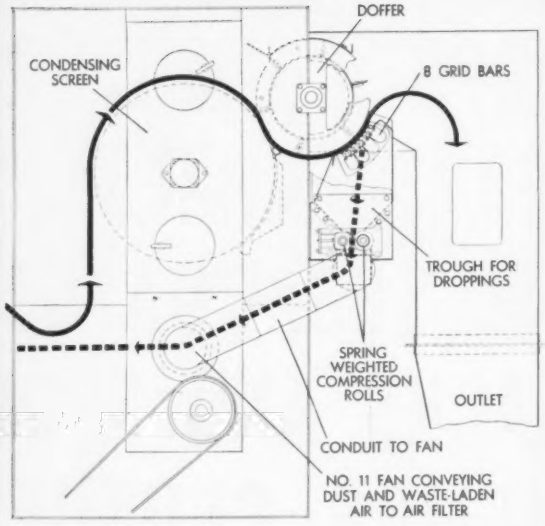
Poor cotton giving you trouble?
Dust and fly a problem?

NEW SACO-LOWELL *Automatic* CLEANING UNIT

FOR ALL NO. 11 DUST & WASTE EXTRACTORS

★ Offers 30% (approx.) increase in cleaning efficiency of No. 11 Dust and Waste Extractors.

★ No extra beating of the stock — no increase in fibre breakage or neps



This view shows the passage of stock and droppings through the No. 11 Desk and Waste Extractor. All droppings are automatically carried away. Stock movement is indicated by solid lines; droppings by broken line.

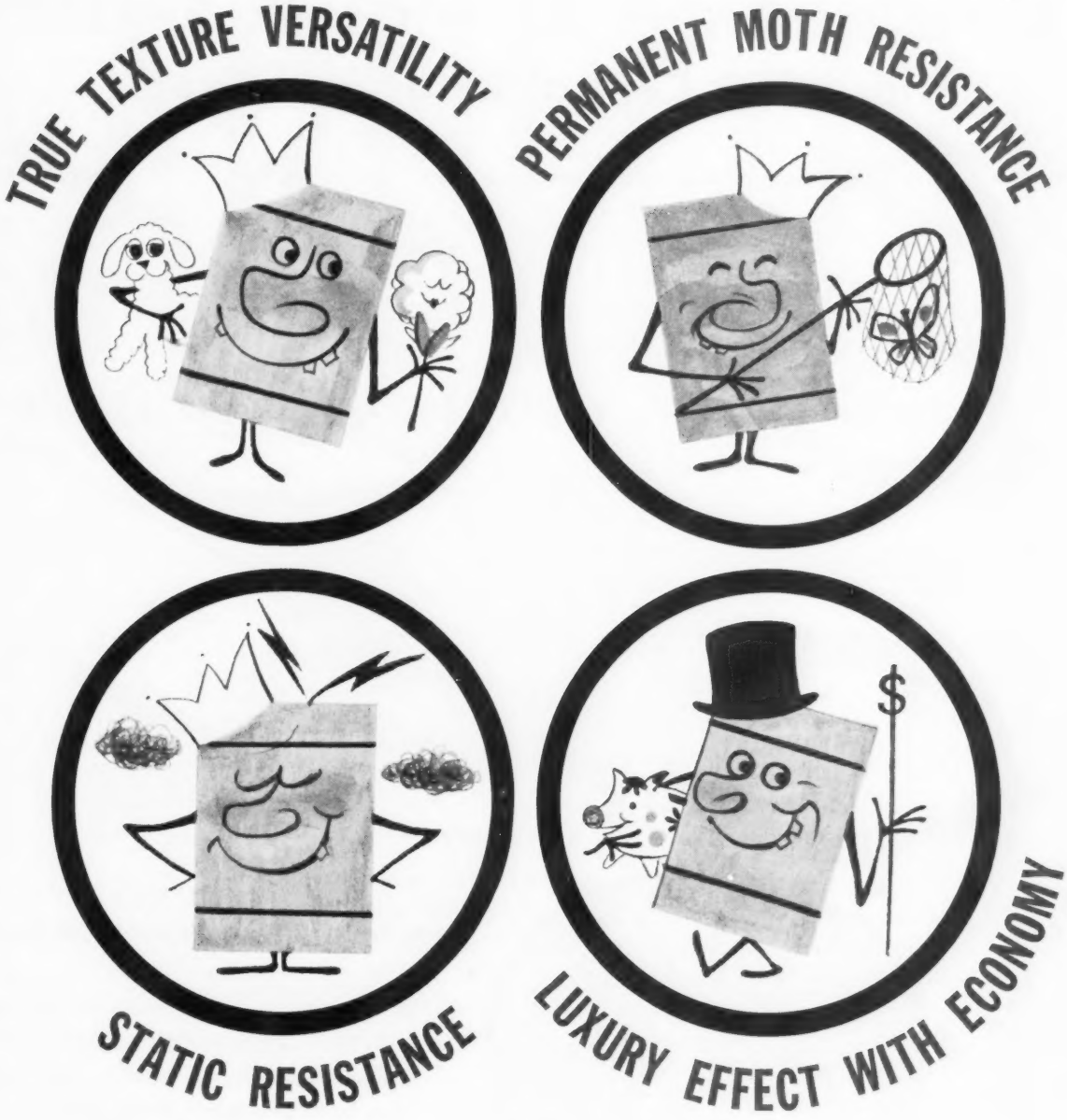
Here is one of the low cost answers to help in proper cleaning of the poor 1957 cotton crop. This new Cleaning Unit is completely automatic, waste never has to be removed manually, does not require extra labor to operate. Mill tests show that the quantity of trash removed by this NEW CLEANING UNIT is equal approximately to 1/3rd of the amount of waste removed by any efficient unit in the opening line. Waste taken out includes motes, stem, leaf, boll and seed fragments. Is installed easily and inexpensively, assures cleaner stock that results in higher quality yarn.

Contact your nearest Saco-Lowell Sales Office for complete information.

SACO-LOWELL SHOPS

60 BATTERYMARCH STREET, BOSTON 10, MASS.

Shops at BIDDEFORD & SACO, MAINE, SANFORD, N.C., EASLEY, S.C. Sales Offices: CHARLOTTE · GREENSBORO · GREENVILLE · ATLANTA



ALL YOURS WITH ENKA RAYON STAPLE

Enka's most modern plant and equipment offers you precision-produced staple for plus performance.

AMERICAN ENKA CORPORATION

PRODUCERS OF JETSPUN® SOLUTION-DYED RAYON • SKYLOFT LOFTED FILAMENT RAYON • FILAMENT AND STAPLE RAYON • FILAMENT AND STAPLE NYLON

530 Fifth Avenue, New York 36, N. Y. • 871 McCallie Avenue, Chattanooga, Tenn. • 428 Jefferson Standard Bldg., Greensboro, N. C. • 2001 Industrial Bank Bldg., Providence, R. I

BETTER YARNS AT HIGHER SPEEDS

with HERR Conical Rings and Flyers!

For 6 oz. Wool and Dacron Blends

5/16" Face Conical Ring. The most popular ring to produce light count yarns at high spindle speeds.

Extra-light-weight bobtail.

Four-arm short brass or aluminum base with balance bail wire.

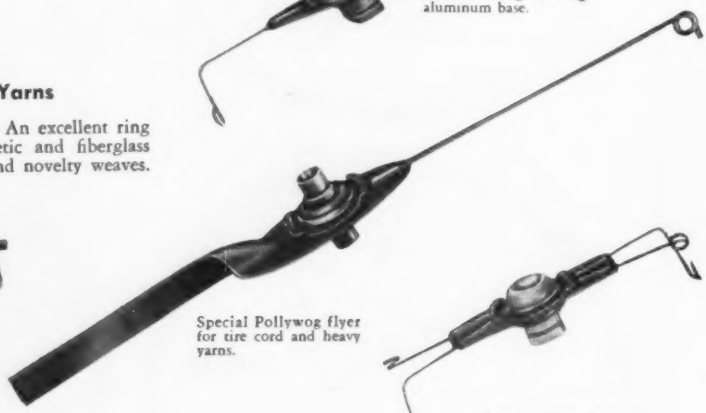
For Medium Counts

3/8" Face Conical Ring for worsted, orlon, nylon, dacron and blended yarns of all types.

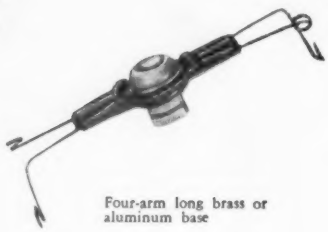
Two-arm, light, long aluminum base.

For Medium to Heavy Yarns

43/64" Face large diameter Conical Ring. An excellent ring for spinning and twisting wool, synthetic and fiberglass yarns for carpeting, tire cord, woolens and novelty weaves.



Special Pollywog flyer for tire cord and heavy yarns.



Four-arm long brass or aluminum base

ACTION OF TRAVELER EQUALIZES YARN TENSION TO REDUCE BREAKAGE

Special Flyers for Helanca and Stretch Nylon Yarns

Better yarns at higher speeds are the rule with Herr Conical Rings and Herr Flyers. Clean, smooth yarns, heavier doffs, less yarn breakage, fewer knots. Designs of flyers and travelers have been worked out for handling synthetics and blends.

Your problems will have the immediate attention of the Herr technical staff. Write or phone today.

HERR

MANUFACTURING CO., INC.

308 FRANKLIN STREET, BUFFALO 2, NEW YORK

FOR SPINNING AND TWISTING WORSTED, WOOLEN, RAYON, NYLON, ORLON, FIBERGLASS AND BLENDED YARNS OF ALL TYPES

FABULIZED

INCREASES SYNTHETIC FABRIC ABSORBENCY... IMPROVES PROFITS, TOO!

- ABSORBENT*
- SOFT
- COMFORTABLE
- EASY TO APPLY
- NO SPECIAL EQUIPMENT REQUIRED

4 times the absorbency of ordinary finishes, as tested by an independent laboratory

Write Today for This Booklet

"THE FABULOUS FACTS ABOUT FABULIZED"

Learn how you can increase your sales with this new miracle finish that makes synthetic fabrics and blends *absorbent* as cotton, *soft* as silk. This twelve-page fact book answers pertinent questions about the FABULIZED process, its application, uses, and its fabulous profit potential.

The New Household Word for Synthetic Fabric Comfort

FABULIZED, INC.

518 S. Delaware Ave., Phila. 47, Pa. • *Phone:* WAlnut 5-2149

WRITE TODAY

FABULIZED, INC.
518 S. Delaware Ave., Phila. 47, Pa.

Please send "THE FABULOUS FACTS ABOUT FABULIZED" ..... ☐
We would like to see a demonstration of FABULIZED ..... ☐

NAME .....

COMPANY .....

ADDRESS .....

ELIMINATE TOP WAXING OF NYLON WARPS... SIZE AND LUBRICATE IN ONE OPERATION...

LET NOPCOSIZE® N AND NOPCOLUBE® 55 WORK FOR YOU

Nopcosize N, a polyacrylic acid size, is internally plasticized to give a pliable yarn during the weaving of filament nylon. Nopcolube 55, an emulsifiable lubricant, is added to the size mix to eliminate afterwaxing at the delivery end of the slasher.

Developed by Nopco chemists, these two products give increased quality, greater economy, and cleaner goods. In fact, the combination of the two in the size pan is acknowledged to be today's most successful technique for sizing producer's twist nylon.

We would be happy to supply enough of both for you to make your own trial run. Just call or write our Textile Chemical Department.

NOPCO

VITAL INGREDIENTS FOR VITAL INDUSTRIES

NOPCO CHEMICAL COMPANY
Harrison, N.J.

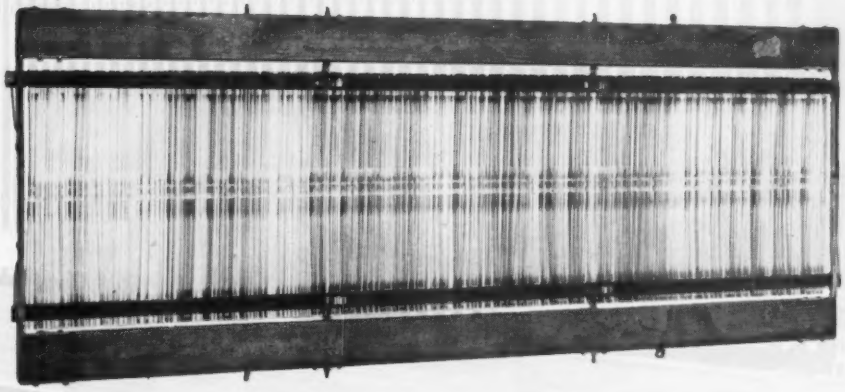
PLANTS: Harrison, N.J. • Cedartown, Ga. • Richmond, Calif. • London, Canada

The pluses of NOPCOSIZE N plus NOPCOLUBE 55

- *Exceptionally flexible, well-lubricated warp*
- *Superior split at higher slashing speeds*
- *No need for top waxing*
- *An absolute minimum of seconds*

20 TROUBLE-FREE YEARS from this Stehedco DRAWTEX HARNESS

Here is an unretouched photograph of one of the original Stehedco Drawtex Harness Frames with the original Heddles after giving more than twenty years of continuous trouble-free service. Here is ample proof of the fine quality and exceedingly long life built into every Stehedco product.



Ever since the revolutionary Stehedco Drawtex Harness was first introduced it has become increasingly popular because of its exceptional versatility and dependability for increasing loom efficiency and producing better quality goods at lower cost.

Ask our qualified Field Engineers to show you how Stehedco Drawtex Heddles and Frames can greatly improve YOUR production efficiency and economy.

Stehedco
STEEL HEDDLE MFG. CO.
PHILADELPHIA 32, PA.
SOUTHERN SHUTTLE DIV.
GREENVILLE, S.C.
Southern

F-5731

Other Plants and Offices: Granby, Quebec, Canada — Lawrence, Mass. — Greensboro, N.C. — Atlanta, Ga. — Textile Supply Co., Dallas, Texas — Albert R. Breen, Chicago, Ill.

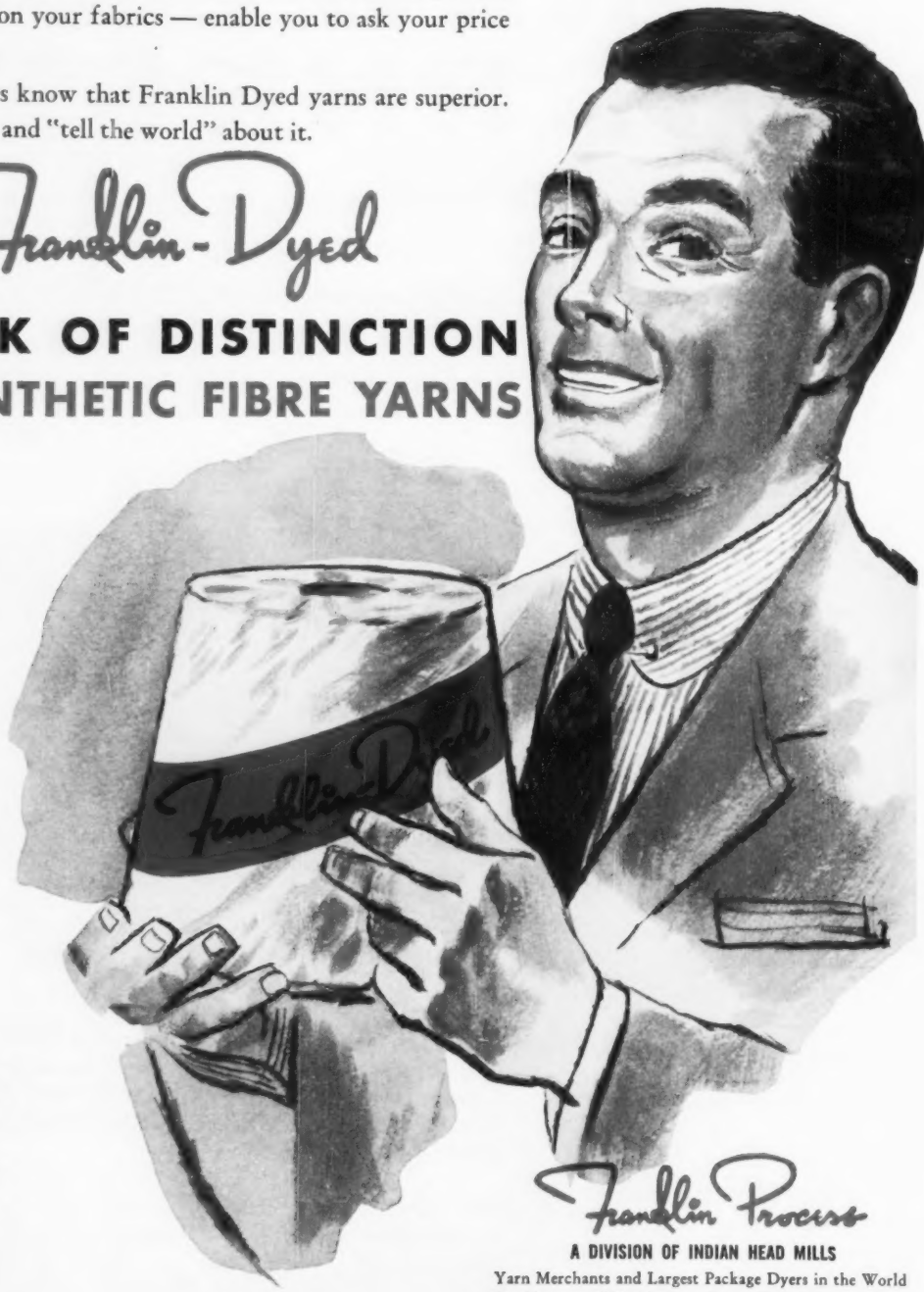
When your synthetic fibre yarns are Franklin Dyed, it sets them apart both in your mill and in your market. Users of Franklin Dyed yarns know that they run well in the mill, because of proper conditioning and proper winding; that the even dyeing reduces shutdowns and seconds (the Franklin spring package is the reason).

The even dyeing and thorough penetration of color also put the stamp of quality on your fabrics — enable you to ask your price with confidence.

Your customers know that Franklin Dyed yarns are superior. So use these yarns and "tell the world" about it.

Franklin-Dyed

A MARK OF DISTINCTION ON SYNTHETIC FIBRE YARNS



WE DYE

Hi-Bulk Orlon* yarns
•
Orlon tow
•
Acrilan
•
Dacron**
•
Ban-Lon®
•
Helanca
•
Spun nylon
•
Spun rayon
•
Blends
•
Cotton
•
Wool
•
Worsted
•

All except Orlon tow are dyed on Franklin spring packages — the "secret" of uniform penetration and uniform shades.

Franklin Process

A DIVISION OF INDIAN HEAD MILLS

Yarn Merchants and Largest Package Dyers in the World
Providence • Philadelphia • Greenville • Chattanooga • Fingerville, S. C.
New York office — 280 Madison Ave.

55-8 *Trademark for Dupont's acrylic fibre **Trademark for Dupont's polyester fibre

MODERN TEXTILES
Magazine

Publisher's Viewpoint

The Fiber Labeling Bill—A Sad Waste of Effort

No one, not even the most gifted or foolhardy prophet, would venture to predict the ultimate fate of a proposed law grinding its way through the Congressional mill. Yet there is a strong feeling in many textile circles that H.R. 469, the bill for mandatory labeling of fiber content of fabrics, may soon be passed by the Senate. It has already been favorably voted on by the House of Representatives.

If H.R. 469 becomes law, it will do so in spite of two years' vigorous effort by large and important sections of the textile industry to stop its passage. The fight against H.R. 469 has been led by the Joint Committee on Labeling of Textiles and Apparel made up of a long roster of trade associations of garment manufacturers and converters. In fact, during the most recent stages of the hearings on the bill held by the Senate Foreign and Interstate Commerce Committee, practically nobody in the textile and related industries, with the exception of one yarn producer and the National Cotton Council, appeared to favor the bill as it is now written.

Most of the opposition to the proposed law stems from the conviction, with which we agree, that the mandatory labeling of fiber content will do the consumer no real good while saddling the fabric and apparel manufacturing industries with the costly burden of providing labels and keeping complicated records. If this is the case, it is sad indeed to realize that our industry, burdened as it is with difficult problems of low prices, overproduction and lagging consumer demand, will have one more unnecessary burden to carry.

The chief proponent of H.R. 469, the National Cotton Council, quite frankly is for the bill because it short-sightedly believes that the proposed law will give cotton a competitive advantage over other fibers. Thus at a time of difficulty for the entire textile industry, when virtually every mill and garment manufacturer is struggling to improve sales in the midst of a business decline, the cotton growers set their special interests above the well-being of the textile industry as a whole.

Would it not be better for the cotton growers, and indeed for all segments of our industry, to work together in harmony and whole-hearted cooperation to increase consumption of textile products instead of making matters more difficult for textiles in its endeavor to get more of the consumer's dollar? When will our great and vitally necessary industry, textiles, learn that progress in its struggle to increase its earnings depends on working together rather than working to split and divide? If we desire to help the consumer, and bring an end to the weaknesses of occasional unworthy products that hurt textiles with consumers, would it not be wiser to pool our energies to provide workable performance standards for all fabrics and all textile end products?

The textile industry will not begin to strengthen its position with consumers until it learns to stop factional squabbles and efforts to intensify pointless inter-fiber competition. What is needed is a united effort to improve textile products and thus stimulate greater consumption rather than meaningless emphasis on fiber content in the hope that one fiber rather than another will gain a brief and dubious advantage.

What consumers want and need is not labels telling them that a given textile product has this or that fiber in its make-up, but really useful information on performance and maintenance properties of a given garment or household fabric. The vast amount of energy now being expended to pass or defeat fiber labeling bills would be far more productively employed if it could be directed to obtaining the setting-up and practicable enforcement of reliable performance standards for all fabrics, be they made of natural or man-made fibers or blends of both.

A. J. Hoe Macdonough

OUTLOOK IN TEXTILE MARKETING

By the Editors

New fibers, new fabrics keep textile pot boiling

Verel Finding Markets—Two years ago, a group of the "newest" new fibers were introduced to the textile industry, after a lull of four or five years in which no new fibers appeared. Among these new fibers were Eastman's Verel, described as a "modified acrylic." Others were Goodrich's Darvan (at first called Darlan) and Dow's Zefran. Later this group was joined by Creslan, an acrylic offered by American Cyanamid. Between the announcement of a fiber and its initial appearances in consumer end products, there is usually a period of hard work, of trial and error, false starts and many "agonizing reappraisals". Verel appears now to be traversing this dangerous stretch with a fair degree of success. The fiber was first introduced in men's socks blended with cotton, in pile lining fabrics for outerwear, and in sweaters. Now the fiber is making new gains. It has been brought out in 100% form in carpets by Callaway. Latest among its new markets are blankets in lightweight, attractively printed constructions by Chatham.

Scratch One Protein Fiber—As new fibers struggle for toeholds in consumer products, it is reported in trade circles (as noted in our March issue P. 8) that production has ceased for Vicara, the protein fiber of Virginia-Carolina Chemical Corp. It is understood that the sales force has been disbanded, and that for all intents and purposes, Vicara has ceased to exist as a textile fiber. Meanwhile, MTM has learned authoritatively that Charles Pfizer Chemical Co. is negotiating with Virginia-Carolina for an arrangement to do research on V-C's textile fibers.

Two New Polyesters—In spite of the difficulties of getting a new textile fiber under way, new fibers keep coming down the pike. Two years ago the rush was into acrylics. Today the favorite in the new fiber sweepstakes appears to be the polyesters. Some time ago, Eastman revealed that it has in the works a new polyester known, for the time being, as "T-90". Fabric trials and other developmental efforts are going on, and it is expected that more will be heard about this new fiber before long. Last month Beaunit Mills announced that it will soon build a plant in Puerto Rico for production of a new polyester using a resin supplied by Goodyear Tire & Rubber Co.

New Specialty Yarn—American Bemberg has followed up the sensational success of its now famous Cupioni slubbed yarn with a series of additional specialty yarns to gladden the hearts of designers looking for new fabric effects. Latest of these is "Parfe," a yarn with color spaced intermittently along its entire length. It comes in two types. Parfe No. 2 has a wide span of color and wide space intervals. Parfe No. 18 has a narrow span of color with narrow space intervals. The color is said to be applied by a special process immediately after spinning and possess the same fastness properties as solution-dyed yarns.

Among the new fabrics made with Parfe are a cloth with a black Parfe warp and a cotton filling in a bayadere stripe effect. Several other fabrics combine a Parfe warp with a Cupioni filling to give a shantung effect. These and other Parfe fabrics are on display at American Bemberg's New York showrooms.

Cooler Uniforms—Truck drivers, delivery men and route men have a right to be as cool as possible under the hot summer sun while at work, Du Pont believes. A tropical uniform fabric of 65% Dacron, Du Pont polyester fiber and 35% rayon has been brought out by Cone Mills for summer uniforms. It weighs 5.8 ounces per yard compared to 8 ounces for uniform cotton twills. It resists wrinkling well and washes and dries easily.

While truck drivers are cooler in Dacron-rayon, 250 men and women guides at the American Pavilion at this summer's Brussels International Exposition will look smart and avoid wrinkling in uniforms of 70% Acrilan and 30% wool.

(Continued on Page 75)

Big growth seen for non-wovens

Doubled output in three years?

By Stephen I. Rudo
WERNER TEXTILE CONSULTANTS

PRESENT indications are that non-wovens will emerge as a new industry. Its future potential and implications will affect not only the textile, but also the paper, chemical, plastics and rubber industries. Based on past performance alone, the future of non-woven products, also called bonded fabrics, is indeed bright. The entire non-woven industry, commercially speaking, is only some 10 years old and yet in this relatively brief period production volume has grown from practically zero to over 90 million pounds in 1957.

The yearly consumption value at the factory sales price level has already reached 100 million dollars. The number of manufacturers involved in the production of non-woven fabrics is now between 25 and 35 depending on how broad or narrow our definition of non-woven is.

End Use Group	NON-WOVEN FABRICS		FABRICS—ALL TYPES
	Present Volume	Estimated Volume for 1960 in million pounds	Present Total Volume
Industrial fabrics	55	85	1,500
Home furnishings, including sanitary textiles	20	55	2,300
Apparel uses	15	60	2,600
TOTAL	90	200	6,400

The trend of this development and the great potentialities of bonded fabrics indicate that within the next three years the production and sales volume will double.

Even with this tremendous growth, it is inconceivable that a very large percentage of textile production will be replaced by non-wovens. At present, the percentage of all non-wovens produced is only 1½% of the entire textile consumption. This, according to our estimates, will rise to 3% within the next three years and in the more distant future, even to 5%.

Let us review briefly the present end uses of non-wovens in fields where they have become well established:

In the industrial field: filters, insulation against heat and electricity, wiping cloths, reinforced plastics, padding, backing for coated fabrics, luggage and automotive industries.

In the household and sanitary markets, we can list as success stories for non-wovens: napkins, table cloths, towels, draperies, backing for upholstery, bed pads, dressings, sanitary products, diapers and bibs.

Finally, in the apparel markets, which is now relatively the smallest in the non-woven field, we find such established products as: interlining, padding, petticoats, aprons, skirts, etc.

This list comprises non-wovens of both the disposable and non-disposable types. Non-disposables have the advantage of higher unit sales price and utilization of the newest synthetic fibers which can be engineered for specific performances. Disposable non-wovens offer larger volumes and utilization of lower priced fibers and waste fibers in general.

We feel that there are equally great potentials for increased utilization in the fields of both disposable and non-disposable products.

New products envisioned for the near future and now in the process of research or in the pilot stages are: leather-type articles for the shoe industry, upholstery and bookbindings, disposable work clothing for medical and industrial applications, printed materials for outerwear uses, etc. The most urgent problems to be solved are how to impart fashion and style to non-woven products; how to engineer better seam strength, heat sealing, softer hand and controlled reproducible quality.

In the *distant* future, it is conceivable that we will have the disposable shirt or even suits. Sewing operations may well be practically eliminated. Spraying and molding techniques may be introduced. Such items as sheetings and printcloth fall within the realm of possible future non-woven development. Furthermore, the use of disposable non-woven apparel may become mandatory in this coming age of space travel and atomic energy.

There is another reason why we feel non-wovens have a bright future. Bonded fabrics lend themselves more than any other textile material to engineering for end-use and to automation. With some imagination, it is possible to develop a mill where on one end fibers and resins are dumped into a hopper, and

(Continued on Page 77)

Always serious about the problems of his industry, Jones today is anxious to see increased acreage for cotton and adequate safeguards against low-wage fabric imports.

The ACMI's new president Jones of

A SUCCESSFUL textile manufacturer, the new president of the American Cotton Manufacturers Institute is far more than just a textile business executive. Close associates who have worked with him for many years estimate that he devotes at least half his energies and his waking hours to a variety of activities outside the management of his company's mills. All these activities, they say, have one thing in common: service to his fellow men either in his industry, or in his home community of Laurinburg and Scotland County, N. C., or his church in which he is an active lay speaker, a teacher of a Bible class, and a highly valued counsellor on educational matters.

Although still a young man—he is 48—Halbert McNair Jones of Waverly Mills and Morgan-Jones, Inc., has been strenuously engaged in textile manufacturing since he completed a graduate course in business administration at Harvard in 1931. He went north to Cambridge after graduating from the University of North Carolina to learn more about business administration with the intention of becoming a banker. But in 1931, there were extremely urgent reasons why he should devote his efforts to textiles rather than banking.

Waverly Mills in Laurinburg, a yarn spinning operation in which his family was heavily interested, was finding the going rough along with most textile outfits in that lean year. Waverly represented a combination of four smaller yarn spinning plants which had been merged into one company in 1929. For many years Waverly had been operated under the guidance of Jones' grandfather, John F. McNair, and later his uncle, James L. McNair. There was need for younger blood and fresh energies to run Waverly, and so the young man who had thought he might go into banking, went into the mill instead. To learn how yarns are made, Halbert Jones started out as a mill worker, spending many full days in one department after another, working at the machines alongside the mill employees, getting to know them, their tasks, their points of view and the men and women personally—an experience, he says now, that has proven invaluable in his later work as a mill executive.

After a year of this on-the-job training, Jones left the mill to go into the office with the title of company treasurer. He gradually assumed more and more of the responsibilities of operating Waverly on a sound and profitable basis, and in 1935 took full charge as president. As the years of the thirties passed and the textile picture began to brighten, Jones was eager to find new opportunities to diversify Waverly's markets as a producer of sales yarns. With Edwin Morgan of Laurinburg's Morgan Mills, an older man of long experience in yarn spinning and fabric weaving, Jones in 1939 created a new venture, Scotland Mills. Starting out as a producer of sheetings, the company quickly shifted into the bedspread field with the production of high quality hobnail bedspreads.

The bedspread business had hardly got well under way when the country went into World War II. In 1942, Jones turned over to others his responsibilities as president of Waverly and vice president of Scotland Mills to enter the army as a First Lieutenant. He served for four years in the Quartermaster Corps, handling with great credit to himself a variety of difficult assignments including the operation of Gaffney Manufacturing Company in Gastonia when the government took over that company as a result of a strike. He also served as a renegotiation officer in Greenville, handling renegotiation transactions of many textile companies for the QMC. He left the army in 1946 with the rank of Major and the award

By Jerome Campbell
EDITOR, MODERN TEXTILES MAGAZINE

Halbert M. Jones is an informed and articulate leader of the textile industry. Its number one problem, he believes, is the urgent need to improve its earnings. For the American Cotton Manufacturers Institute he sees broadened functions to help achieve this desirable end

Waverly Mills

of the Legion of Merit for the good work he had done.

Back in Laurinburg, and once more in charge at Waverly and active in the management of Scotland Mills, Jones plunged into the big job of swinging over both operations from their wartime absorption in government work to making yarns and fabrics for the civilian market. His task was the triple one of expansion, modernization and diversifying into new products. Scotland Mills's bedspread line was broadened to include many new styles, colors and quantities. At Waverly, spinning equipment was gradually renewed and modernized to make the plant a modern, long draft, competitive operation. For Waverly also, a crucial decision was made—to add weaving to what formerly had been a sales yarn spinning operation only. By digging out under one of the mills, a weave room was created and new Draper looms were bought in groups until the present total of more than 300 was reached.

Along with all this new equipment, a broad but well-defined marketing policy was sketched out. The conviction was well-established in the minds of Jones and his associates that Waverly was and would remain a small operation in an era of increasingly gigantic textile giants. Consequently, they saw Waverly's profitable survival lying in making it a specialty mill producing distinctly styled and fine quality yarns and fabrics. They had in mind to serve markets where flexibility and variety of products would enable them to exploit Waverly's relative smallness as an advantage.

These marketing policies, in the main, they have carried out with satisfactory results. Waverly today is a highly diversified spinning and weaving operation. It produces sales yarns of cotton and spun rayon for both carpet backing and carpet pile surfaces; it produces cotton yarns for the electrical insulation field; yarns for bedspreads; tufting yarns for bath mats and scatter rugs, and a variety of slubbed and seeded and other special effect yarns for draperies and upholstery. In its weaving department Waverly turns out a wide range of drapery and dress fabrics, most of them produced in cooperation with New York converters.

While all these changes at Waverly were taking place, Jones and his business associate, Edwin Morgan, have been growing in other directions. In 1946, they became convinced that the bedspread business, although highly competitive, had proved itself a good one for their Scotland Mills. They decided to expand in this field, too, and seek through manufacture of finished bedspreads, branded and packaged for sale to retail distributors, to get closer to the consumer market. Their aim was to build for their company a name that consumers would know and rely on. To this end, they formed Morgan-Jones, Inc., a marketing organization with its main office in New York and distribution throughout the country to sell their bedspreads and Morgan Mills' line of "kitchen cottons" directly to retailers. Since the company was established, the name Morgan-Jones has become well-known in the bedspread and kitchen fabrics markets as advertised, branded merchandise of superior quality. Further growth in bedspread manufacture became possible in 1955 when Aileen Mills in Biscoe, N. C., was acquired.

These, then, in fairly summary outline are the facts of the textile career and the present textile activities of the new president of ACMI. But, as we indicated earlier, they are only a part of the story, perhaps a small part of the story of Halbert Jones, a really dedicated man who feels that his mission in life carries him far beyond the tasks of running a textile firm.

To begin with, Jones' efforts on behalf of his industry make him truly one of the business statesmen of textiles. He has come to his post as president of the American Cotton Manufacturers Institute with a long record of selfless work in defense of the industry's interests. Years of participation in the work of the Carded Yarn Association brought him to the presidency of that trade group in 1952-1953. Paralleling his efforts on behalf of the carded yarn manufacturers has been his participation in the North Carolina Textile Manufacturers Association culminating in his serving as president this year. His participation in the affairs of the ACMI caused him in 1953 to be elected a director for three years; in 1956 a vice president, and now, at this month's annual meeting, he has taken over as president.

In its new president, ACMI has a thoughtful, deeply informed and highly articulate man, well aware of the problems confronting the textile industry and a vigorous proponent of the Institute's current program for attacking these problems. At this time, when the former National Federation of Textiles completes its affiliation with ACMI, members of NFT coming into the larger organization will be particularly gratified to know that Jones has a keen anticipation of the contribution that NFT members can make. For one thing, Jones' Waverly and Scotland Mills have long been deeply engaged in the use of man-made fibers and yarns; thus as a textile manufacturer, his personal horizons are by no means limited to cotton. The synthetics, he believes, are here to stay; he sees for them an expanding function in providing variety and con-

(Continued on Page 59)

Ornamentation of apparel fabrics

How to use extra yarn in designing

By Victor Lobl

FOR MANY YEARS extra yarn figuring has been the backbone of yarn-dyed apparel fabric designing. This method has been extensively used in the production of all types of fancy cotton and synthetic fiber fabrics. The remarkable popularity of this embellishment is due to a combination of many desirable features.

1) To the designer, in his clamor for a diversified design repertory, the extra yarn figuring has always been a favorite hunting ground because it offers challenging and varied possibilities for ornamentation. The designing methods are quite simple, yet they present a tremendous latitude for pattern flexibility; probably more so than any other system. Just about any degree of flourish or size of figure is technically possible.

2) The manufacturing processes present practically no restrictions due to the fact that these decorations can be woven independently from the ground construction. No complicated machinery is needed. An ordinary dobby loom equipped with a top beam stand is the only requirement for weaving. Indeed, some very neat designs have been produced on dobbies of not more than 12-16 harness capacity.

3) From the manufacturer's point of view, the extra yarn designing presents an economical method of producing specialty fabrics in the medium to semi-high price range. The near plain construction renders these fabrics especially suitable for mass production. This ease of manufacturing stimulates variety styling which in turn promotes sales. In their bid for consumer favor, mills turn out an impressive array of new patterns along this line every season.

4) From the consumer's angle, it would be naive to suppose that he cares very much about design technicalities. Yet, there is much evidence to show strong consumer acceptance of these creations, probably because these designs are easily attuned to the ever changing fashion trend.

The strongly individualistic buyer of today favors an original and distinctive look in apparel materials. This interest makes him increasingly aware of artistically developed patterns and of harmonious multi-hued figure designs. Particularly sought, currently, are figure weaves featuring certain object images, such as airplanes, violins, footballs, golf or fishing equipments, animal forms, flowers, toys and just about anything that strikes the designer's fancy. The purpose character of the fabric is often derived from the design pattern.

Where jacquard looms are available, the designer has a greater opportunity to exhibit his artistic skill as he can work out pictorial or object designs much more in detail than is possible on a dobby loom. Yet, notwithstanding these artistic advantages, most of the production along this line comes off the dobby loom. Since the bulk of these fabrics is used for casuals or informal apparel, unpretentious decorations are more appropriate.

Designing does not mean just the simple act of drawing figures. Those figures must be practical to produce and at the same time must serve the purpose for which the fabric they adorn is intended. By exploiting the potential possibilities of the extra yarn design method these conditions are readily obtainable.

Distinguishing Characteristics

The designs we have discussed in the preceeding articles were defined as detached figures or stripes produced by means of floating the regular warp or filling, or both, in contrast to the ground. Since the ground and the design were formed by the same yarn, none of it could be removed without leaving a gap in the cloth. The extra warp and filling catagories are altogether different inasmuch as these designs are produced by additional figuring yarns. These yarns do not contribute to forming the fabric itself. As the term "extra" implies, these yarns are introduced into the cloth in addition to the ground construction for the sole purpose of ornamenting the fabric. If removed from it, it still leaves a complete structure. This difference in composition is sufficient to render this fabric group unique with respect to designing technique, manufacturing methods and appearance.

Our subject for this and later articles will be the detailed discussion of these designs.

The extra yarn may be introduced into the cloth to form detached spots or stripes in either warp or filling direction or both simultaneously.

Accordingly, we may subdivide these chapters into four major classifications:

a. Spots formed by an extra system of warp yarn, otherwise known as warp clips.
b. Spots obtained by means of extra filling, referred to as filling clips.
c. Combination warp and filling clips. Obviously these are detached figures produced by extra warp and corresponding extra filling.
d. Extra yarn stripes, warp, filling or both.

In the first part we shall deal with the decorations described in group "a" above, namely, the warp clips.

Warp Clips

Indicative of this design group is that the figuring yarn is entered into the cloth from one or more separate beams. These ends float on the back side of the

(Continued on Page 41)

How much dye created all this color?

Just teaspoonfuls! But a trick of double exposure makes them appear as huge mounds.

It isn't always that simple, but National Aniline has been turning tricks with color for eighty years.

We continually develop new dyes and application techniques. Our Color Standardization Control Laboratory rigidly maintains high standards of quality and uniformity. And with our amply-staffed Application Service Laboratories coast-to-coast we render exceptional technical service.

No one is better equipped to serve you.

NATIONAL ANILINE DIVISION ALLIED CHEMICAL & DYE CORPORATION

40 Rector St., New York 6, N. Y. • Akron Atlanta Boston Charlotte Chattanooga Chicago Greensboro Los Angeles New Orleans Philadelphia Portland, Ore. Providence San Francisco Toronto

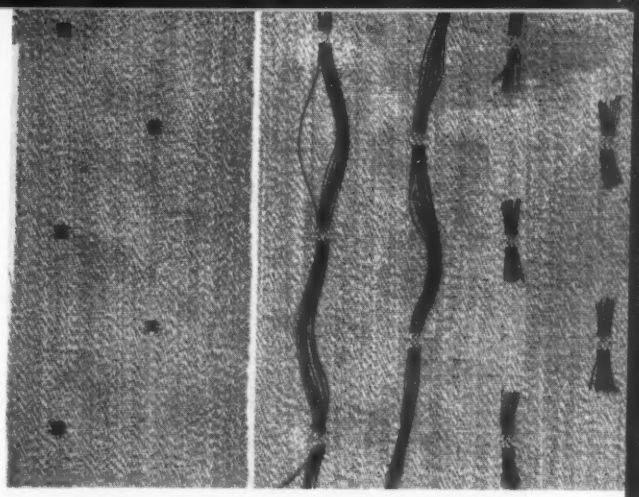
Allied Chemical

Extra Yarn Designing

(Continued from Page 38)

fabric over long stretches at a time and they are raised to the face only when required to produce the design. In the meantime, the ground weave continues uninterrupted throughout the length and width of the fabric. Where the floats between the spots are very long they are clipped and sheared away in a subsequent operation. This clipping and shearing is an important process in the manufacturing of clip spot fabrics and we shall return to the subject later with a detailed description.

Fig. 120 a,b,c, illustrates a simple warp clip pattern before and after shearing. The face side of the cloth is shown in view (a) and the back side in view (b). The latter presents the long extra yarn floats between the spots. View (c) shows a part of the same cloth after the excess yarn has been sheared away. The sheared part is not always the back side of the fabric. In some styles, it coincides with the face side where the loosely cut, protruding yarn constitutes part of the design feature. Again, there are styles which require both sides of the cloth to be sheared.



A B C

Fig. 120—Warp Clip. (A) Face Side, (B) Back Side showing the extra yarn bridge between spots and (C) presenting the bridge cut and the excess yarn sheared away.

Principles of Drafting the Design

The method of indicating the design on point paper is very simple. The basic principles are demonstrated step by step in Figs. 121 a,b,c,d. The same method as shown in these illustrations will be found applicable to any size or shape figure of this kind.

The procedure is as follows:

Step one, of course, is to determine the ground fabric particulars. These are drafted in Fig. 121 (b). Accordingly we shall use, for our purpose of illustrating the method, a plain weave ground that is to be drawn in six harnesses straight and reeded two per dent throughout.

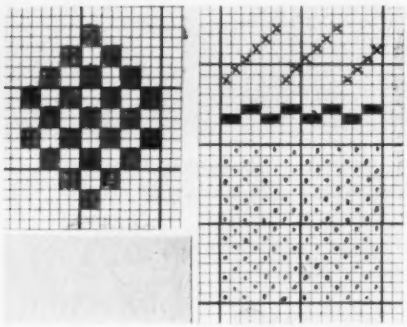
The next step is to select and sketch the decoration. This is usually done alone without the ground weave, in a manner to correspond with the way it is expected to appear on the fabric. The spot to be used for the example is given in Fig. 121 (a).

The following function is to arrange the ground weave leaving blank vertical lines where the motif is to be inserted. The arrangement for most apparel fabrics is one ground and one figure sequence in the portion of the design represented by the extra yarn. In other parts of the cloth, between the spots, the ground follows its usual order. The method of laying out the ground weave in the manner described above is presented in view (c) of Fig. 121. Filled-in blocks below the diagram indicate the spaces reserved for the extra ends.

To complete the weave diagram, the motif has to be inserted on the blank lines in the proper sequence. The process is illustrated in view (d) of Fig. 121. It will be noted that the motif is painted solid in contrast to the ground which is represented by dots. These solid blocks show where the extra yarn is to be lifted over the face in order to produce the elaboration; otherwise, these ends remain depressed below the passing filling.

Aside from the 1:1 ground to figure ratio mentioned above, other distribution orders may be employed. It all depends on the solidity of the ornament desired. For example, greater fullness to the spots is

(Continued on Page 44)



A B

Fig. 121—(A) Decoration as it is to appear on the cloth. (B) Ground Weave with drawing-in and reed plan.

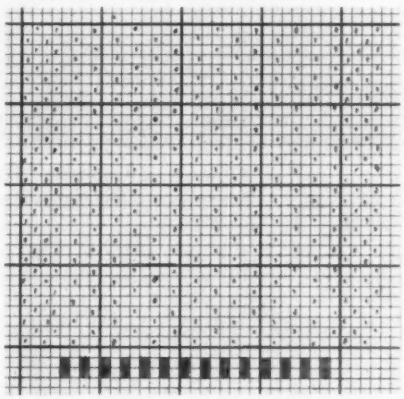
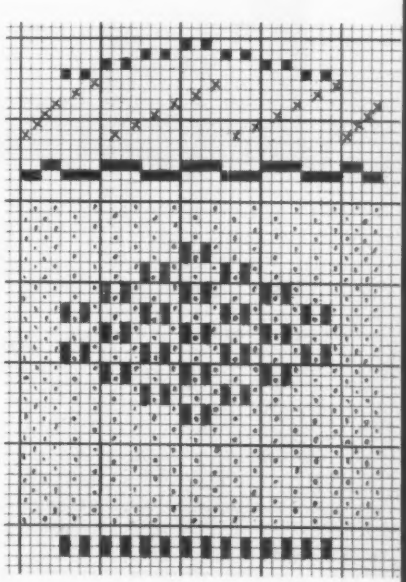


Fig. 121 (C)—Ground Weave arranged with blank spaces assigned for the decoration to occupy.
(Right) Fig. 121 (D)—Completed Weave diagram with drawing-in and reed plan.



Texturized filament nylon? . . . What

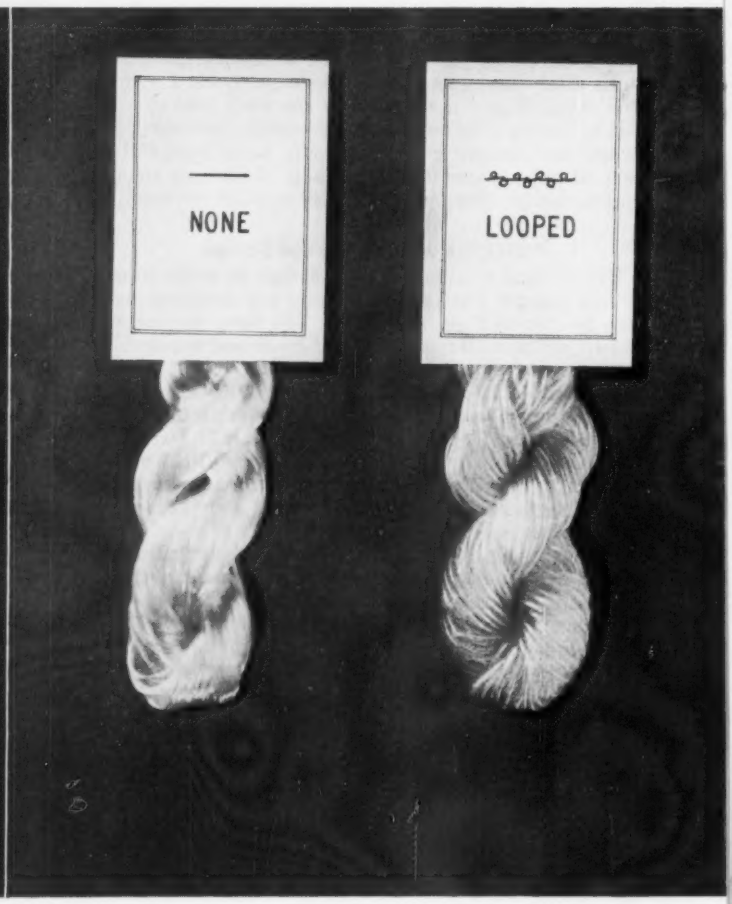
Take a Look at How Caprolan Responds to Four Popular Bulking Processes!

The left-hand skein is simply 60 yards of our 2100-112-0-0-HB heavy yarn which *has not* been texturized by *any* method. To its right are four skeins of the same weight of the same yarn bulked by looping, curling and two methods of crimping.

These texturized yarns of Caprolan tell their own story!

If you are a producer of carpets, upholstery fabrics, decorative textiles, industrial fabrics or military goods, texturized filament yarns of Caprolan open a whole new world of fabric engineering and design opportunities for you. Used alone, or in combination with each other, texturized yarns should hold a high priority in your future fabric plans.

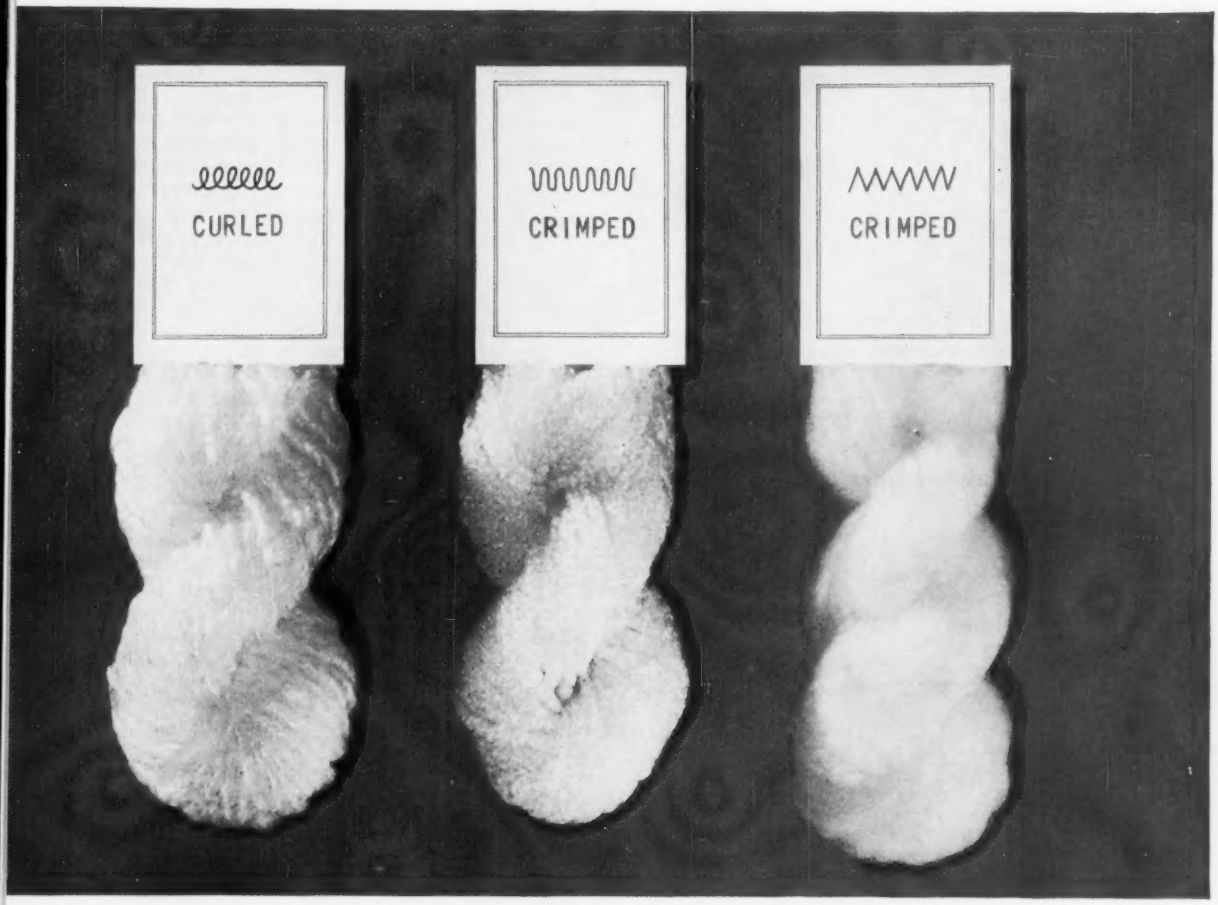
When ordering texturized filament nylon yarns, specify Caprolan, which has all the advantages of nylon plus a number of extra, important performance values!



60 yards of Caprolan 2100-112-0-0-HB heavy yarn which has *not* been texturized.

Same weight, same yarn texturized by *looping*.

a Difference *caprolan*® † Makes!



Same weight, same yarn texturized by *curling.*

Same weight, same yarn *crimped* by one process.

Same weight, same yarn *crimped* by second method.

All texturized skeins have the same number of winds and the same amount of relaxation.
For further information, technical assistance or list of sources, write us today.

caprolan®... *the performance fiber... by Allied Chemical*

Fiber Sales and Service Allied Chemical *National Aniline Division*

261 Madison Avenue, New York City 16, N. Y.

† Allied Chemical's polyamide fiber

Extra Yarn Designing

(Continued from Page 41)

given if two extra threads alternate with one ground, ratio 1:2. These two extra threads side by side may weave independently from each other or they may weave as one. The latter arrangement is illustrated in

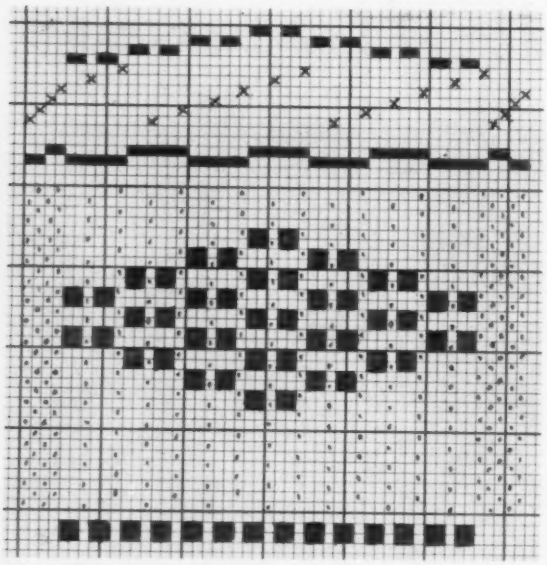


Fig. 122—One ground, 2 figure ratio.

Fig. 122. It will be noted each of the extra threads is drawn on a separate line though they weave alike. Less emphatic is the two-ground, one-figure 2:1 ratio distribution. Such an example is given at Fig. 123.

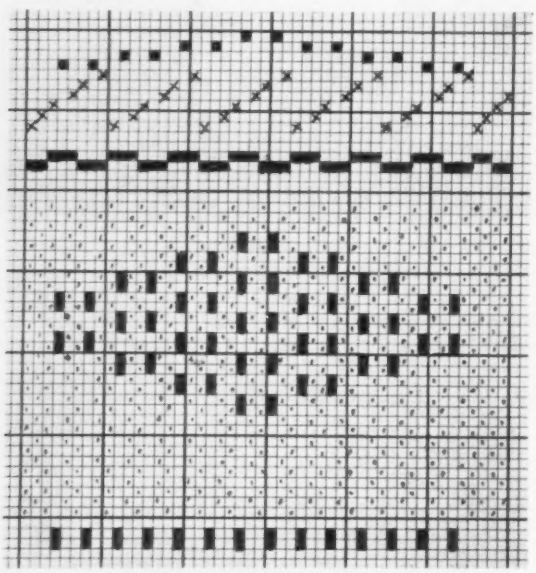


Fig. 123—Two ground, 1 figure ratio.

Harness and Reed Draw

Close examination of the drawing drafts and reed plans of Figs. 121, 123 will show the governing principles by which these types of weaves are generally drawn. It will be observed that the drawing-in is arranged in two groups of harnesses. In each of the examples 6 harnesses, indicated by x-s, are provided for the ground. Needless to say, the number of ground harnesses and the draw sequence varies according to the weave and warp density. (The usual practice at the loom is to hang the ground harnesses in the front and the figuring harnesses in the back). The draw of the figure weave is marked by solid blocks. In Fig. 122 the parallel ends may be entered in two heddles placed side by side or both ends through one heddle eye. By actual experience, the first method has been found to have an edge over the second insofar as it keeps the ends better separated. When two ends are drawn in the same heddle eye and one breaks, it has a tendency to wrap around the other thereby failing to stop the loom but causing either an extended pick-out or a break-out. The same defect does occur even if they are drawn in separate heddle eyes, but not as frequently as when they are drawn together.

The ground construction regulates the reed density. In the examples of Figs. 121, 122, 123, the ground calls for a two ends per dent draw, but for heavier sley more ends per dent draw would be required. The extra yarn is entered into the reed in addition to the ground at the specified position and ratio. This insures an evenly spaced foundation that will be the same under and along the spots as in between them. The ratio varies according to the design layout and the fullness of ornament desired. In our examples the ratios are:

Fig. 121-d, two-ground, two-figure
Fig. 122, two-ground, four-figure
Fig. 123, two-ground, one-figure

A comparison of the relative motif extensions in these examples will serve to make this condition clearer. Assuming the dents per inch of the reed used for the corresponding designs is identical, the width of the motifs will be the same in Figs. 121-d and 122, though the number of ends differ, because the extra ends spread over an equal number of dents (7). The appearance may be loftier in one design than in the other, for reasons already explained, but this condition is beside the point here. The motif of Fig. 123 extends twice as wide as the others mentioned before, due to its spreading over twice as many (14) dents.

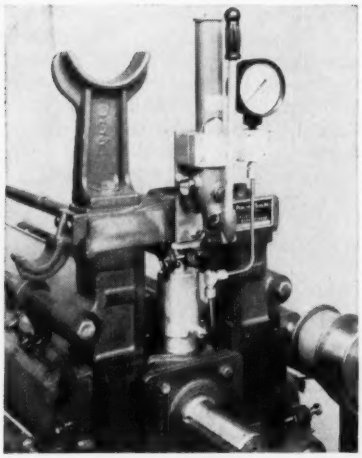
It can also be added here that the length of the motif is determined by the picks per inch. Fewer picks per inch produce comparatively longer motifs and vice versa.

Another point worthy of note is the manner in which the single extra end of Fig. 123 is reeded between two grounds and not to either side of them. This is a standard practice for such draws and it has the beneficial effect of holding the figuring yarn in a more uniform spacing and it aids in pushing those ends clearer to the face.

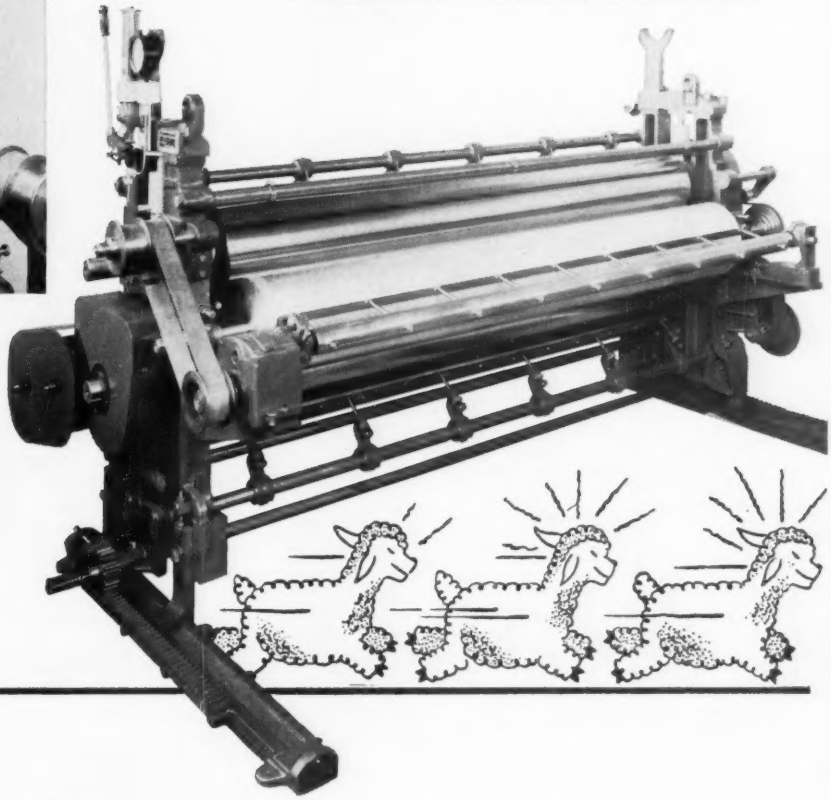
Distributing Warp Clips on Design Paper

For further illustration, let us take now a specific case and follow it through the various steps of drafting. Suppose that it is desired to duplicate the fabric illustrated in Fig. 120 and the pertinent particulars are as follows:

(Continued on Page 46)



PERKINS
BURR CRUSHER

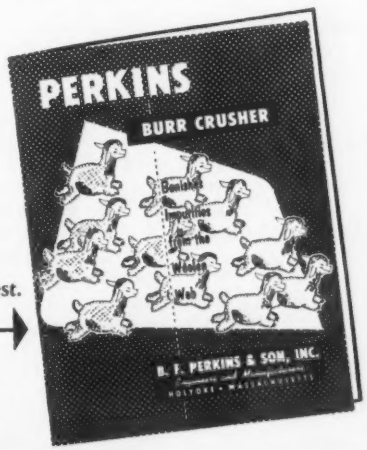


Banishes Impurities from the Woolen Web

Perkins Burr Crusher Machines are manufactured by the original manufacturer of the first American-made Burr Crusher Machines during the early period of installation in this country and Canada, from 1941 to 1944. The machines are standard and the parts are readily replaceable on existing Burr Crushers now in operation. All moving parts subjected to wear, such as the chilled iron rolls, bearings, gears, studs and sprockets, are also standardized with the many Peralta Machines now in operation throughout this country and Canada.

Machinery and Engineering Corporation of Amherst, New Hampshire, distribute and service the Perkins Burr Crusher Machines.

This bulletin, which gives complete Burr Crusher information, yours on request.



B. F. PERKINS & SON, INC.
HOLYOKE, MASSACHUSETTS

Extra Yarn Designing

(Continued from Page 44)

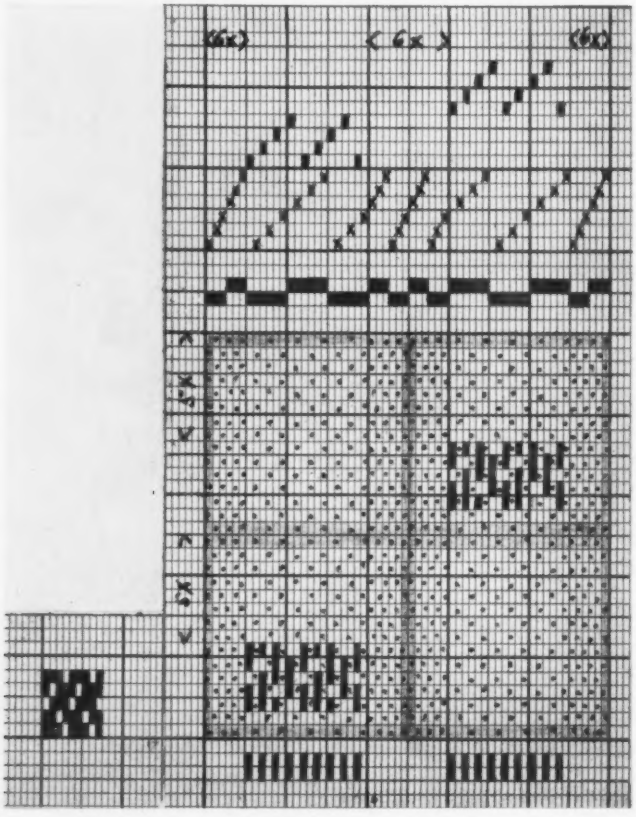


Fig. 124—Corresponding design diagram of Fig. 120. To the left is shown the motif by itself (Fig. 124a).

Ground construction grey cloth:	144 x 76
Ground weave:	plain
Spot design:	as shown in Fig. 124(a)
Spot distribution:	plain weave order
Spot to figure ratio:	1:1
Spot spacing:	1¼" lengthwise, 1⅛" across, figure included

Reed draw: 3 ends per dent in the ground; 6 ends per dent in the figure portion. The three per dent draw of the ground is due to the heavy construction.

Ground harness draw: 6 harness straight. Though this gives distribution of 24 heddles per inch, which is close to the high mark, by actual experience it has been found to give better results than would an 8 harness draw with fewer heddles per inch due to the fact that the former breaks even with the reed draw. The specific advantages are: smoother weaving, fewer misreeds in the cloth and faster drawing-in.

The method of constructing the design diagram to correspond with the cloth sample of Fig. 120 is presented in Fig. 124. The general theories of this process have been discussed in the January issue (page 50-51) of this magazine and reference may be made to that article for related details. With regard to this particular case, examination of Fig. 124 will reveal that the repeat consists of 180 ends and 94 picks. The warp may be further broken down to 162 ground threads and 2 x 9 = 18 extra figuring ends. The spots are separated by 72 ground threads.

When drafting a design of this type, it is not necessary to show every single ground end in a separate line. Abbreviations may be made as indicated in Fig. 124. This abridged form saves time in drafting, shows up incidental defects better and is easier to handle and control all the way around. With the design feature itself, this is different. Enough area of the repeat should be sketched to show the motifs unabridged and in their relative position.

The repeat area is divided into four appropriate sections. This division facilitates the alternate motif distribution seen in the sample.

Alternate Color Warp Clips

There are two fundamental ways of producing multi-color warp clips: side by side and one above the other. The side by side arrangement is the simpler one since all that needs to be done is to warp the various colors in the desired sequence on the top beam. Everything else follows the same procedure as outlined above. The other idea that receives frequent application shows the same motive produced in two different colors or color combinations one right above the other in the same vertical line. This method is illustrated in Fig. 125. If the colors chosen for this illustration are, say, red and green, the motifs will appear on the cloth in alternate red and green spots. The portion formed by red is indicated in little circles (o) whereas the green figure is presented by filled-in blocks (■). The plain ground is shown with dots, as usual.

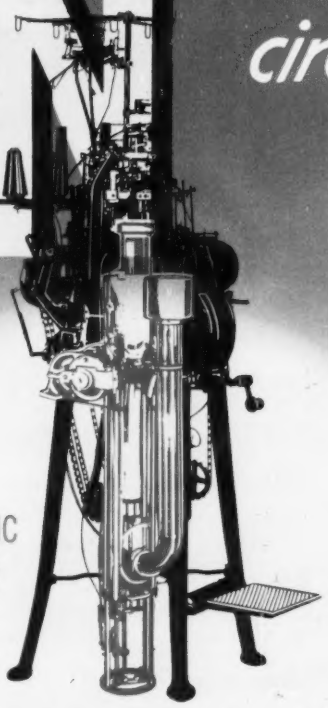
The reed draw follows the same principle as previously explained. Two ground ends are placed in each dent except for the figure portion of the design where four additional ends are crowded in with them to make the total six ends per dent. No unusual weaving difficulty need be expected from this crowded condition as long as the reed is coarse enough to allow free movement of all ends. The extra crowding of figuring yarn here is not for the purpose of producing bolder spots, as it is the case with Fig. 122, but to introduce two systems of yarn alternately. Each yarn system is to produce a separate spot. In Fig. 125 two drawing-in drafts will be noted, view (a) and view (b). In both instances, the ground is drawn straight through six harnesses as indicated by the x-s. View (a) shows the two series of yarns drawn side by side alternately, whereas in view (b) the same are entered as separate groups. Either method may be used, however, mill practice gives support to the draw illustrated in view (b) because it seems to be easier to handle by the drawing-in hands and weavers.

When different extra yarn systems are employed in the same design, the important point to consider is whether they can be woven from one top beam or need to be run from separate beams. The deciding factor here is the take-up differential. If the take-up ratio between the different yarn series is the same, or

(Continued on Page 52)

KNI

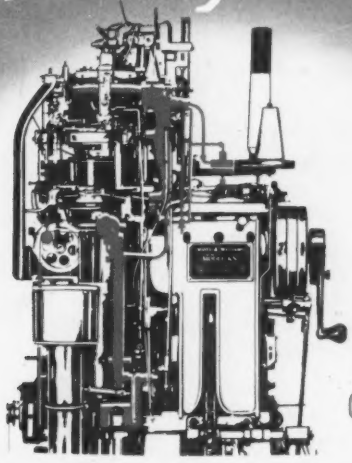
the MOST versatile circular knitting machine



AUTOMATIC TENSION DEVICE

for **SEAM-FREE NYLONS**

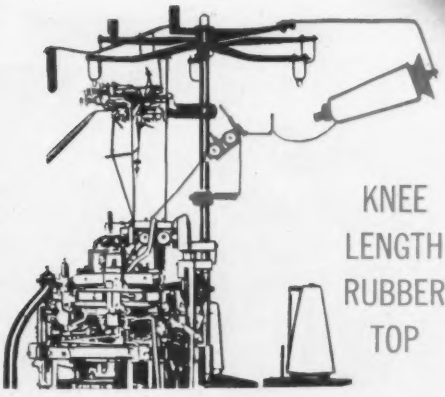
Maximum Non-Stop Production
Constant Knitting Tension
Highest Quality Hosiery



I.S.D. LENGTH CONTROL

for **SEAM-FREE NYLONS**

Finest, Sheerest Nylon Hose to Planned Length

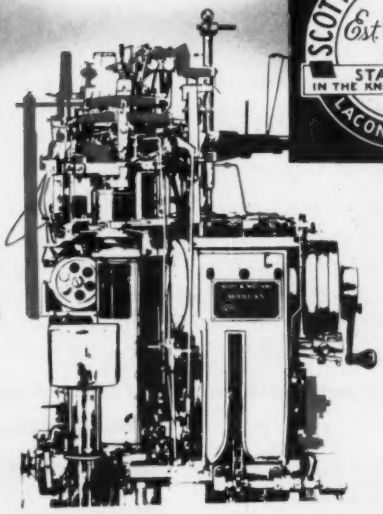


KNEE LENGTH RUBBER TOP

for **SEAM-FREE NYLONS**

Automatically Knit-in Stay-up Rubber Tops

SCOTT & WILLIAMS, INC. Est. 1865 STANDARD IN THE KNITTING INDUSTRY LACONIA, N.H. U.S.A.



TWO FEED STRETCH HOSE

for **SEAM-FREE NYLONS**

Stretch Type Hose using 2 Yarns

Designed and Manufactured by

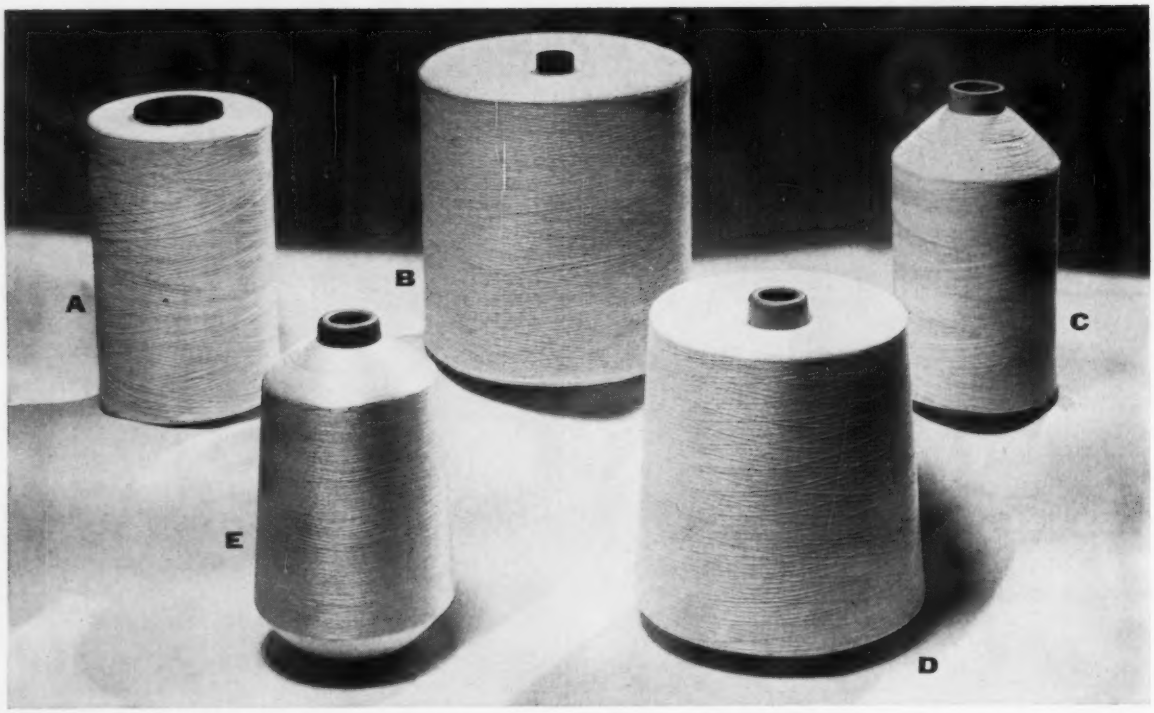
Scott & Williams, Inc.

MAIN OFFICE AND PLANTS,
LACONIA, N. H.

SALES OFFICE — EMPIRE STATE BLDG., N. Y. 1, N. Y.

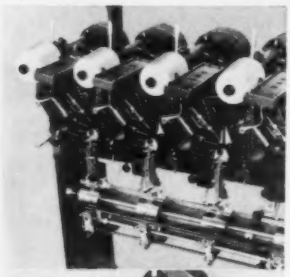
DIVISIONAL OFFICES
READING, PA. — HIGH POINT, N. C. — CHATTANOOGA, TENN.

For Versatility and Quality Packages

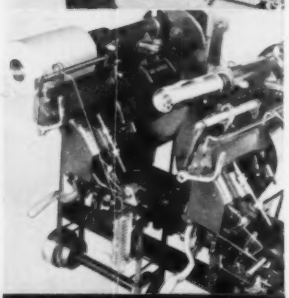


A — 1⅛" dia. rayon dye tube. B — 6" parallel tube of cotton yarn. C — King spool of cotton thread. D — Straight edge cone of filament yarn. E — Pineapple cone of filament yarn.

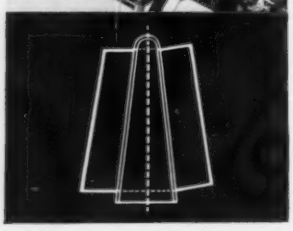
Use the FOSTER MODEL 75 WINDER



Pineapple cone attachment



1⅛" dye tube holder and pressure roll assembly for producing rayon dye packages, any softness desired.



Right-hand side of diagram shows how Foster Model 75 cone is wound. Left hand side shows how conventional cone is wound.

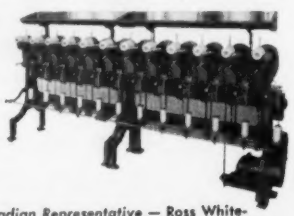
VERSATILITY — The photograph above shows five different types of packages that can be produced on the Foster Model 75. Different machine parts, of course, are required, for different packages, but changeovers are readily made.

QUALITY PACKAGES — The Foster Model 75 uses the precise wind principle. Motive power is applied direct to the spindle, rather than to the surface of the package, and each spindle is driven by an individual 180° contact, quarter turn belt, insuring constant spindle speed.

The Model 75 cone has a convex base. The base is at about 90° to the surface of the paper carrier instead of to the axis of the spindle. Thus each layer of yarn at the base is in a progressively higher horizontal plane, so that it does not nip the layer below. This construction also directs the pressure of the yarn downward, enabling the cone to hold its shape and preventing sluffing.

Machine contact with the yarn is minimized, so that soiling of expensive fibres is avoided.

SEND FOR BULLETIN A-92-B. Learn about other quality features of the Foster Model 75, which cannot be described here, due to lack of space.



FOSTER MACHINE COMPANY

A Yarn Winder for Every Purpose

Westfield, Massachuestts, U.S.A.

Southern Office — Johnston Bldg., Charlotte, N. C. • *Canadian Representative* — Ross Whitehead & Co. Ltd., 1475 Mountain St., Montreal, Que. and 100 Dixie Plaza, Port Credit, Ontario *European Representative* — Muschamp Textile Machinery Ltd., Keb Lane Bardsley, Oldham, England.

We shudder when
they sometimes say:

"It's a Great 'Gimmick'!"

We agree that *Lanolized* is great — a truly great fabric finish — but "gimmick" it's *not* — No, Sir! . . .

Some people think that anything possessing merchandising advantage is a "gimmick". Really, nothing could be further from the truth. A "gimmick" is a means whereby questionable advantage of a passing nature is gained from the unsuspecting — a means of taking unfair advantage of the gullible or unthinking. Forbid that *Lanolized* should ever enter into such a category!

Lanolized is an *honest* product — an *honorable* fabric finish that provides *sincere* merchandising advantages! It's Nature's very own fabric finish: lanolin plus some very important added ingredients to make lanolin-in-fabric do the job it's supposed to do — give a wonderfully soft, smooth, skin-compatible "hand" to most fabrics. "Desirable" is the word.

Because the *Lanolized* finish *is* good — and we want it to *be* good, always — it's available only through quality-controlled, licensed sources. Store buyers should ask their resources about *Lanolized* finished fabrics . . . for women, children and infants' wear.

Lanolized®

THE MIRACLE FINISH THAT PROVIDES THE ULTIMATE IN FABRIC BEAUTY AND COMFORT

SCHOLLER BROTHERS, INC.

PIONEERS IN THE BETTER FINISHES THAT MAKE THE BETTER FABRICS . . . SINCE 1907

Authorized Manufacturers and Distributors of LANOLIZED—The Miracle Finish. Collins & Westmoreland Sts., Philadelphia 34, Pa. IN CANADA: Scholler Bros., Ltd., St. Catharines, Ontario.

Gown by Sophie of Saks Fifth Avenue

COLUMBIA-SOUTHERN CHEMICALS HELP SHAPE

IDEAS ON DISPLAY . . . watched every day by the management team building and selling successful products. Their responsibilities range from research and design to marketing and delivery.

These men and women make the profit-creating decisions for going, growing businesses . . . textiles, petroleum products, paper, metals, plastics, food, glass, soap, foils and wraps, chemicals, pharmaceuticals, cosmetics, rubber goods, disinfectants and cleansers. A vital part of their jobs is spotting and applying new trends in materials selection, processing, and handling that produce better goods at lower cost.

The versatile basic chemicals are deeply involved in the style changes continually reshaping almost all products and processes. Columbia-Southern, a leading producer of these essential industrial chemicals, can be a big help to your business as both supplier and technical adviser. Call Columbia-Southern with your next order. You'll soon see why Columbia-Southern chemicals, research, service, and technical assistance help shape profitable futures for products. The Columbia-Southern Chemical Corporation, One Gateway Center, Pittsburgh 22, Pennsylvania. Offices in principal cities. In Canada: Standard Chemical Limited.

$NaHCO_3$—Sodium Bicarbonate • $CaCl_2$—Calcium Chloride • Na_2SO_4—Sodium Sulfate
KOH—Caustic Potash • CCl_4—Carbon Tetrachloride • NH_3—Anhydrous Ammonia

Caustic soda and chlorine, basic Columbia-Southern chemicals, are used throughout many industries . . . textiles, for one.

THE FUTURE FOR SO MANY PRODUCTS

LOOK AT Cl_2—CHLORINE

Highly reactive chlorine's transforming touch creates thousands of molecular regroupings necessary to economical processing of products ranging from solvents to plastics, wonder drugs to refrigerants.

LOOK AT Na_2CO_3—SODA ASH

This versatile alkali serves as basic raw material or essential "refiner" in the manufacture of glass, chemicals, detergents, ferrous and non-ferrous metals, pigments, soap, textiles, paper and many other items.

LOOK AT NaOH—CAUSTIC SODA

Petroleum producers and cellophane manufacturers, textile and rubber makers, businesses by the dozens put caustic soda's voracious appetite to work "eating" away unwanted organic or inorganic compounds.

LOOK AT H_2O_2—HYDROGEN PEROXIDE

One of Columbia-Southern's newer products, this compliant chemical has a range of reactions that permits its use for bleaching paper and textiles, as a rocket propellant, as a reagent in organic syntheses.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION A Subsidiary of Pittsburgh Plate Glass Company

HCl—Muriatic Acid • $TiCl_4$—Titanium Tetrachloride • $Ca(OCl)_2$—Calcium Hypochlorite
Chlorinated Solvents • Chlorinated Benzenes • Agricultural Chemicals • Chrome Chemicals

Extra Yarn Designing

(Continued from Page 46)

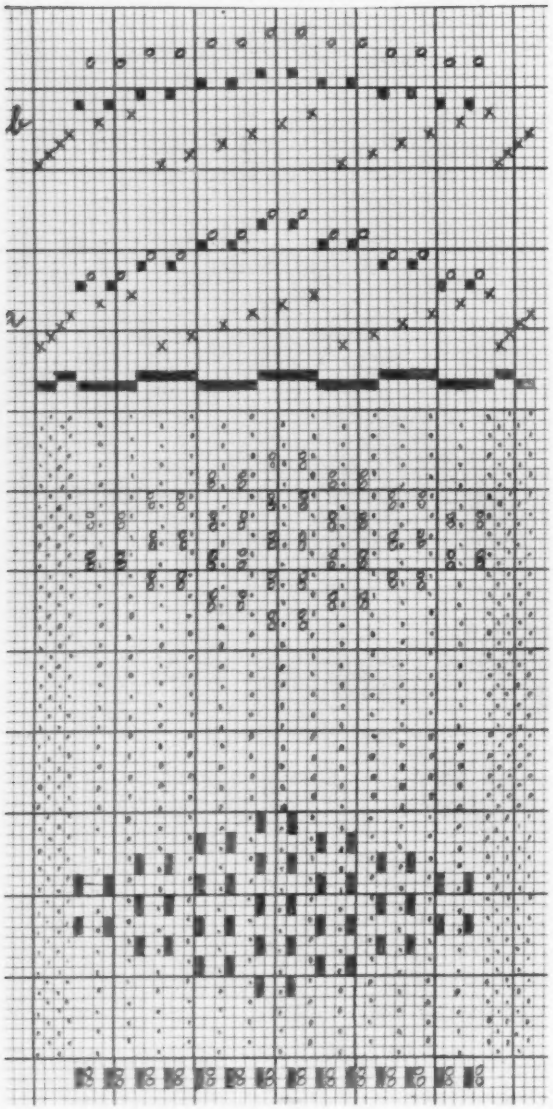


Fig. 125—Alternate color warp clip

nearly the same, within certain intervals, say 4-5 inches depending on the weave, they usually can be woven from one top beam. On the other hand, if the motifs are very long, so that one takes up out of proportion while the other just floats unused over several inches at a time, it probably will be found best to warp them on separate beams. In running an unfamiliar combination it is often necessary to experiment with a short sample before going into full-set production for most satisfactory results. It may happen that slackened ends are pulled forward by the reed and locked in by the first few picks as the weave changes from one series to the other, thus forming undesirable loops. In extreme cases, such a condition is liable to cause the unused ends to become so slack that the sagging dropwires keep stopping off the loom. Both of these difficulties may sometimes be overcome by the use of two extra beams rather than one.

It is not required that the motifs produced by the different yarn series look alike. Nor is it necessary that they consist of the same number of ends or that they have the same harness-reed draw. Each series of yarn may produce its own design (altogether different from the other), even if they are run from the same top beam. This feature can be arranged to give the fabric plenty of variety.

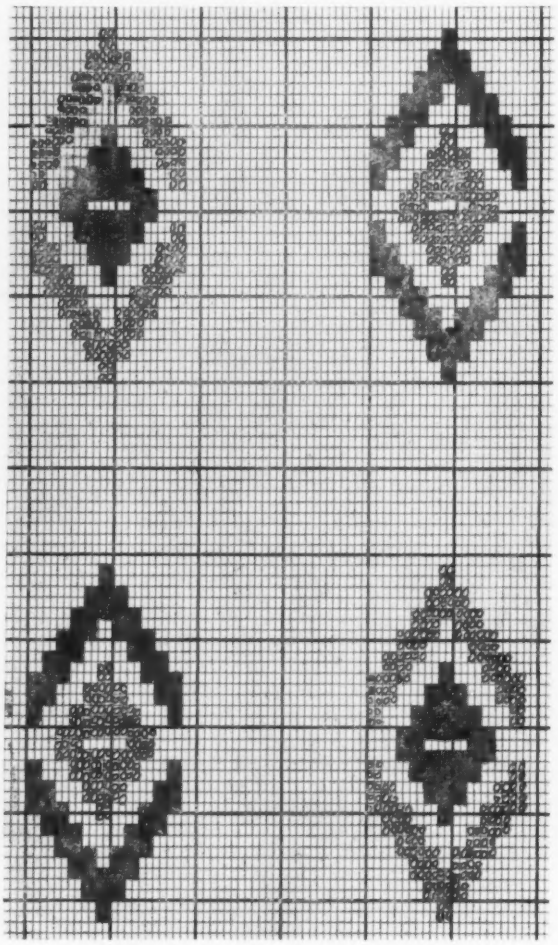
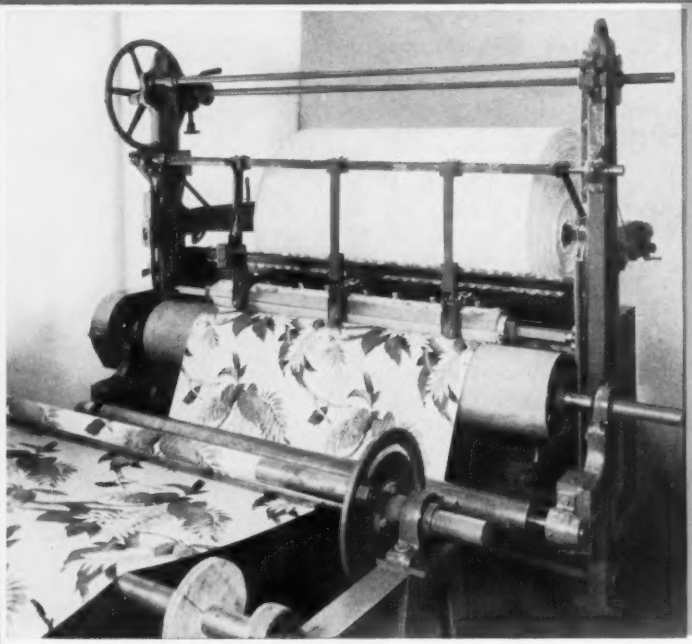


Fig. 126—Warp clip of interchanging colors

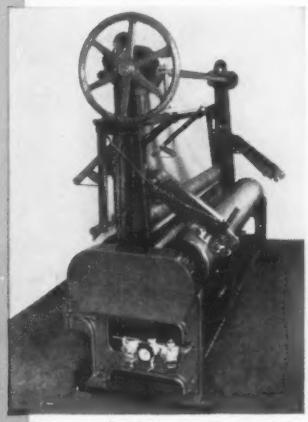
One interesting application of the technique described above is the partly divided color design in which bits of both color systems are interchanged with each other. Such an example is shown in Fig. 126. The solid blocks and the little circles each represent a different color which are blended together. Such color blend has a tendency to soften objectionable loudness of too much contrast. In Fig. 126, it will be noted, only the spot design is given without the ground weave.

TO BE CONTINUED

DYEING and FINISHING SECTION



Emco Rotary Cutter Winder can be used on short-run batches as encountered in screen-printed materials. Winds and cuts rolls of 12-inch minimum diameter.



Improved Simpson Pneumatic Winder features roller bearing arms and double release to doff rolls evenly to platform or truck.

Exciting new uses

for cutting and winding equipment

Fabrics considered difficult or "impossible" to handle on rolls can now be cut and wound in range operation without slow-down or stopping. Consider these examples:

(1) Tricot knits in widths up to 168 inches—with no chance of pulls or runners in the fabric

(2) Embossed vinyl in 24-inch diameter rolls — without crushing the pattern

(3) Sanforized cloth — with no effect on shrinkage, no tension on the fabric

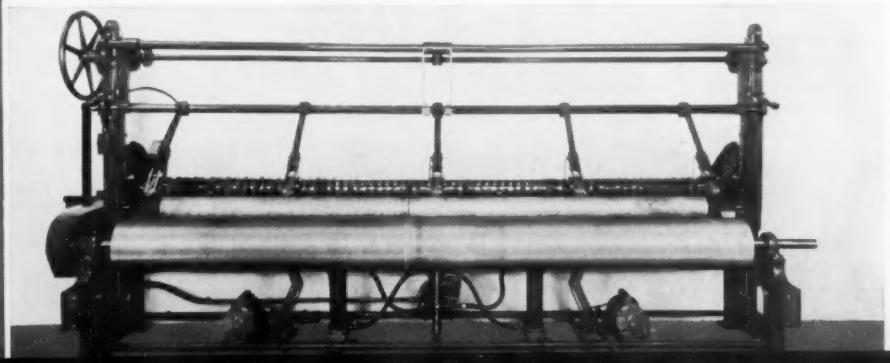
Let Butterworth engineers show you the production advantages of the new and improved Emco Rotary Cutter Winder, and the Simpson Pneumatic Winder. You will save the refinishing of 40 to 50 yards that, under other methods, may be soiled in completing one roll and beginning another.

Handling is reduced. Labor is reduced. Production is speeded up. Bulletin on request.

H. W. BUTTERWORTH & SONS COMPANY
Bethayres, Pa. Division of Van Norman Industries, Inc.

Butterworth

BLEACHING
PRINTING
SPECIAL
PROCESSING



126-inch Emco Rotary Cutter Winder now in use in tricot finishing range. Handles fabrics gently without pulling warp threads.

Patents and patents pending.

New techniques in dyeing Acrilan

By Walter H. Hindle,
CHEMSTRAND CORP.

ACRILAN was one of the first fibers to have a "built-in" dyeability by incorporation of a weakly basic material with the acrylonitrile of which Acrilan contains at least 85% by weight. By this means Acrilan was rendered dyeable by all wool dyestuffs by essentially the same mechanism as understood for wool, except that generally speaking, more mineral acid is required for Acrilan than wool.

Acrilan will also dye readily with disperse dyestuffs in depths from pastel to black; with cationic dyestuffs in depths from pastel to medium; and with combinations of the two to yield full bright shades. A number of naphthol combinations based on Naphthol AS-D, when coupled with the appropriate bases, yield extremely heavy shades with good all-round fastness. Soluble vats, applied from a bath containing retarding agents, may also be used to dye Acrilan by methods similar to the application of wool dyestuffs.

New Effects with Acrilan 16

The versatility of Acrilan has been recently enlarged by the introduction of a new form of the fiber known as "Acrilan 16". It supplements the established form of Acrilan which has been in production for a number of years. Acrilan 16 is dyed only with disperse, or cationic dyestuffs, or mixtures of the two classes.

The dyeing rates of disperse dyestuffs are somewhat higher for Acrilan 16 than for Acrilan although saturation levels are somewhat lower; and although very dark shades may be obtained by their use, it is preferable, from an economic standpoint, to use cationic dyestuffs for black and other very dark shades. Shades in up to the dark-medium category may be applied using disperse dyestuffs with the advantage in ease of application that disperse dyestuffs afford. A wider range of disperse dyestuffs is available for Acrilan 16 than for Acrilan because of a considerable improvement in their Fade-Ometer stability on Acrilan 16. A number of the cheaper disperse dyestuffs may, therefore, be used to advantage.

As previously indicated, the dyeing rate of cationic dyestuffs is more rapid on Acrilan 16 than Acrilan, and it becomes necessary to employ small amounts of a retarder such as Product RL-895. Cationic dyestuffs possess very much higher saturation levels on Acrilan 16 than Acrilan, and dark shades are readily obtained. The problem of pH in relation to specific dyestuffs is still pertinent, and here urea is considered of advantage.

Cationic dyestuffs are applied to both Acrilan and Acrilan 16 whenever an improvement in fastness over that provided by disperse dyestuffs is a requisite of end-use. For instance, in the carpet field, cationic dyestuffs are used to provide 40 to 80 SFH fastness and outstanding wetfastness.

Because of the difference in dyeability between Acrilan and Acrilan 16, two-color or color-and-white effects can be obtained on a piece dye basis. Selected wool dyestuffs can be used to dye Acrilan into a full range of shades and which leave Acrilan 16 either white or lightly stained. If a color-and-white effect is desired then the white of the Acrilan 16 may require to be cleared by means of a light sulfoxylate strip. For most two-color effects, the Acrilan 16 is usually sufficiently clear to permit the dyeing of most shades. The Acrilan 16 is then dyed with selected basic dyestuffs at a pH of 3 which is too low to permit dyeing on the Acrilan.

By this means, a wide variety of two-color or color-on-white effects are available on a piece dye basis or a 100% Acrilan fabric. In blends with rayon cellulosics, piece dye three-color effects can be obtained. In two-color work it is important that Acrilan be used for the full shades, and that the Acrilan 16 be used for the lighter or brighter shades or for white.

Dyeing Acrilan-Rayon Fabrics

Acrilan-rayon blends in the woven apparel field have assumed real importance in standard fabric construction, particularly in connection with minimum-care garments. It is in this field that the dyer must assess his requirements in relation to the several ways by which Acrilan can be dyed.

A combination of direct and disperse dyestuffs can be used for Acrilan-rayon blends in a one-bath operation to meet women's wear specifications. Cationic dyestuffs are used to provide the required brilliance of shade. As a generalization, selected combinations will yield fastness to light at 20 SFH and washability at 120°F. Where higher fastness is required, the shades ranging from light to dark-medium are dyed with cationic dyestuffs; and the dark shades are dyed with chrome dyestuffs, followed by a conventional dyeing of the rayon in a second bath. Based on an aftertreatment designed to fix the direct dyestuff, good washfastness between 140°F and 160°F can be obtained depending upon the shade. Lightfastness ranges between 30 and 60 SFH in this shade area. It will be appreciated from the foregoing that two-color or color-and-white effects can also be obtained. When rayon is dyed leaving Acrilan white, direct dyestuffs are used, selected for their non-staining properties.

(Continued on Page 56)

Above right — birthplace of J. R. Geigy, Basle, Switzerland.

200 years Geigy

The history of synthetic dyestuffs is the history of Geigy

Two centuries ago, in the city of Basle, Switzerland, a native young merchant, Johann Rudolf Geigy, established a business as a dealer in "Materialwaren" . . . drugs, colours, pharmaceutical preparations and spices.

From inception, Geigy was associated with colouring. In 1859, three years after Perkin discovered mauve, Geigy entered the synthetic dyestuff field.

Being 200 years old is one thing but, celebrating 200 years of progress is something else. From a handful of people in 1758, Geigy today employs over 8,000 in over 40 Geigy companies throughout the world.

During these two centuries, Geigy has been privileged to supply the textile industry with many revolutionary dyestuffs, some of them history-making firsts that led to new and improved techniques in dyeing. In the years to come we shall continue to strive to make even greater contributions to the fields we serve by furnishing them with products of progress.

GEIGY DYESTUFFS: Division of Geigy Chemical Corporation, Saw Mill River Road, Ardsley, N. Y. Branches in all textile-producing centers.

Modern new Geigy plant at Ardsley, New York. ▲

▼ Geigy headquarters in Basle, Switzerland.

Acrilan Dyeing

(Continued from Page 54)

In the dyeing of chrome colors onto Acrilan-rayon blends, phosphoric acid is used to exhaust the dyestuff onto the Acrilan. This minimizes danger of tendering the cellulosic component.

A wide range of chrome dyestuffs is available for dark-medium to dark shades. At the beginning of the dyeing operation acetic acid is used to aid in exhausting the dyestuff onto the fiber. Subsequent additions of 2% owg phosphoric acid, twice, serve to complete exhaustion and give fiber penetration. The chroming operation usually requires slightly longer than that for wool but follows essentially the same pattern. Owing to the fact that certain chrome dyestuffs tend to overchrome, it is important that recommended dyestuffs be used.

Lower-Cost Blacks

Excellent blacks can be obtained on 100% Acrilan or Acrilan-rayon blends by the use of naphthol combinations. In this case, the requisite amount of Naphthol AS-D is dissolved conventionally and added to the dyebath. The naphthol is regenerated by the addition of acetic acid, and the combination is dyed at the boil for 90 minutes. The goods are subsequently rinsed and coupled at 180°F in nitrite and acetic acid for 45 minutes. The resultant black is scoured to remove surface dye and to clear the rayon if so desired. Blacks obtained this way are appreciably cheaper than when dyed by disperse or chrome methods. At the completion of this operation the rayon is dyed to shade as required.

In the dyeing of Acrilan-wool blends, use is made of the ability of Acrilan to dye with wool dyestuffs. Owing to the difference in rate of dyeing between wool and Acrilan in a conventional wool dyeing operation, the wool is dyed at the almost total expense of the Acrilan. In recent months a new development has been forthcoming in which, by the addition to the dyebath of certain cationic and non-ionic compounds excellent unions can be obtained by the use of the same dyestuffs for both fibers. This is known as the Chem-Acril process.

The addition of this specific cationic material is known to form a complex with the selected wool dyestuff which is kept in dispersion by the use of a non-ionic material. Under these conditions the rate of wool dyeing becomes markedly slower, while the Acrilan dyes at a normal rate, thus permitting both fibers to dye simultaneously.

This method is in contrast to previously described systems of Acrilan-wool dyeing where in one case transfer of the dye from wool to the Acrilan was the salient point in the operation and, in the other case, where the dyeing rate of the Acrilan was accelerated by an acid pretreatment step. Of the greatest importance in the control of union dyeing is the effective use of sulfuric acid. The amounts to be used vary in accordance with the dyestuff classification where, for example, in the case of neutral dyeing premetalized dyestuff, 0.5% to 2.0% sulfuric acid owg in a 40:1 liquor ratio gives excellent unions. Acid and chrome types require from 3 to 5% sulfuric acid while, acid metalized types require from 4 to 6% sulfuric acid in the same 40:1 liquor ratio.

The use of a higher ratio of liquor to goods involves the use of additional sulfuric acid, and the converse also applies. Some 700 wool dyestuffs have been examined in the union dyeing of Acrilan-wool blends by the Chem-Acril method, and over 250 showed union dyeing potential. Many dyed the wool at the expense of the Acrilan while, interestingly enough, some dyed the Acrilan at the expense of the wool.

The factors of control in the union dyeing of Acrilan-wool blends by the Chem-Acril process include concentration of sulfuric acid specifically for the dyestuff type, temperatures as close to the boil as possible and not less than 205°F, and time. On the basis of temperatures of 208°F and poorer dyestuff selection, a definite relationship exists between time and acid in the obtaining of good unions. It is possible by using higher quantities of sulfuric acid to obtain unions in 45 minutes dyeing time while, on the other hand, lesser amounts of sulfuric acid would produce the same union in 90 minutes.

A good method of approach in the development of new color formulations is to use slightly less than the amount of acid required to bring union in one hour dyeing time, and compensate by a slightly longer dyeing time or an addition of sulfuric acid during which time there will be migration of dyestuff from the wool to the Acrilan. As knowledge is obtained about the specific shade, then in subsequent dyeings the dyeing times can be shortened by increasing the initial quantity of sulfuric acid.

Avoiding Too Much Color

A poor selection of dyestuff can result in an overbalance of color going to the Acrilan, and when this is seen to be occurring in any dyeing operation the dyeing of the Acrilan can be arrested by a reduction in temperature to 190°F and an increase to pH 4. However, if normal precautions are observed, this is not frequently encountered.

Recent developments indicate that by selecting those dyestuffs that dye the Acrilan component of an Acrilan-wool blend preferentially, under conditions of Chem-Acril dyeing and higher acidity than used in union dyeing, Acrilan can be dyed with wool dyestuffs leaving the wool only lightly stained. If the staining is excessive, a clearing operation with acidified sulfoxylate is sufficient to give Acrilan-dyed wool-white effects. Should it be required to dye wool and leave Acrilan white, then dyestuffs selected for their non-staining properties on Acrilan while the wool is being dyed at 190°F using formic or acetic acid can be used. A pretreatment in the dyebath with materials used for resisting nylon is of considerable assistance when Acrilan is required to be unstained.

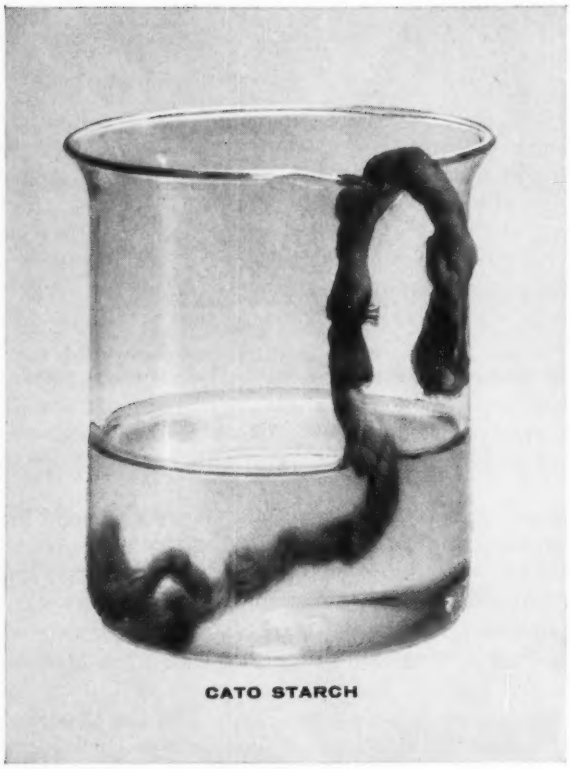
Derived from a paper presented at a meeting of the Canadian Association of Textile Colourists & Chemists, Guelph, Ontario.

New Fabulized Licensees

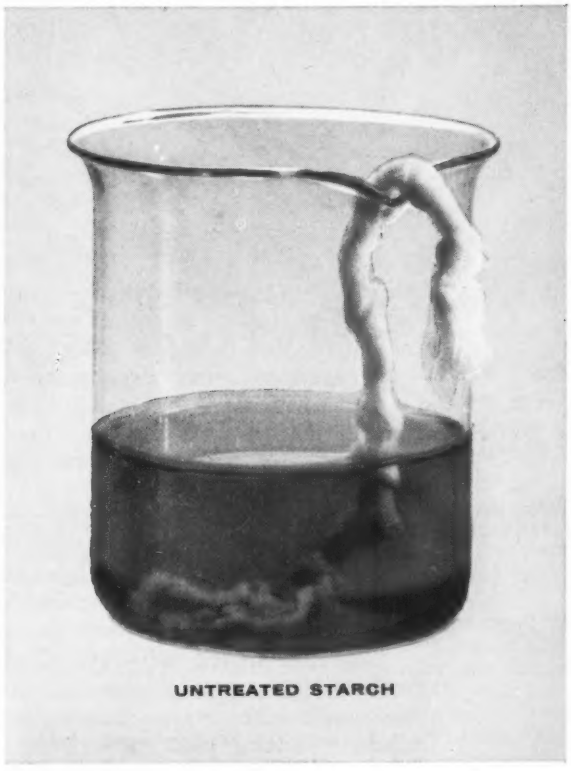
The appointment of six new licensees has been announced by Fabulized, Inc., for "Fabulized," a new finish said to make synthetic fabrics absorbent. The licensees are: Charles H. Bacon Co., hosiery manufacturer; Carillon Lingerie Co.; Adirondack Finishing Corp., a custom dyeing and finishing mill; Fox-Wells Tricot Division; E. Schulze & Sons, finishing mill specialists, and Lee Dyeing Co. of Canada, Ltd. According to Fabulized, tests by an independent laboratory have shown its finish quadruples the absorbency of synthetic fabrics.

CATO®

CATIONIC STARCH FOR WARP SIZING



CATO STARCH



UNTREATED STARCH

IODINE TEST proves greater starch affinity

A simple experiment. Take 100 ml. of solutions of Cato and corn starch at 0.005% concentration. To each add a 1 gram strand of any anionic yarn: cotton, wool, viscose, dacron, or others including blends. Boil for a few minutes. Cool and allow strands to drain as shown above. Now add drops of iodine to the strands and their respective solutions.

What happens?

The blue of the iodine test for starch proves the much greater affinity of Cato to anionic yarns—due to its patented cationic molecular structure. Showing how Cato promotes better adhesion, reduces shedding and improves weaving in warp sizing.

Interested? We'll be glad to supply trial quantities and have one of our textile specialists demonstrate in your plant.

National

STARCH PRODUCTS INC.

750 Third Avenue, New York 17 • 3641 So. Washtenaw Avenue, Chicago 32 • 735 Battery Street, San Francisco 11

REPORT FROM EUROPE

BY SPECIAL CORRESPONDENT

World Spindleage Rising—LONDON: Latest annual report on number of spindles in place in world spinning mills presents sombre picture for millmen in high-cost countries. The report, prepared by International Federation of Cotton and Allied Textile Industries, underscores that spindleage is up in India, Japan and Communist China.

The figures at the end of last July: India 12,376,000, up from 12,068,000 the previous year; Japan 9,018,000, up from 8,501,000; China 7,500,000, up from 6,290,000. The report, released here, also showed that number of United Kingdom spindles had dipped from 23,972,000 to 22,487,000—surprising no one. (Total world spindles were 129,422,000, a rise of 551,000 from year before. U. S. was just behind Britain.)

European Plastics Expansion—West European countries over next few years are planning sharp increase in production of polyethylenes, polyvinyl chlorides and polystyrene, Organization for European Economic Cooperation reported in Paris. Other plastics where less important increases in capacity are planned include polytetrafluorethylene, polyvinyl acetate, polyesters and epoxy resins.

Reported expansion will cover acrylic and thermoplastic materials. Germany, one of four principal plastic producers in Europe, is concentrating on polyethylene and other polymers, polyesters and polycarbonates. U. K. expansion will center on polyethylenes and polyvinyl chlorides; Italy on polyvinyl chlorides, polyethylene and melamine resins, and France on polyvinyl chlorides, polystyrene and aminoplasts.

German Plastics Fair—The German Plastics Federation, the Association of Manufacturers of Machinery for Processing Rubber and Plastics, and the Association of Cutting and Punching Tools for Plastic Working will sponsor an International Trade Fair for plastics in Dusseldorf October 17-25, 1959.

European Dye Demand on Rise—Stepped up demand from European man-made textile manufacturers has brought about a steep increase in West Europe's dyestuff production, OEEC reports. Output is now running at record annual rate of 114,860 metric tons. Future dyestuff output will increase less sharply but it will bring greater emphasis on quality. Very little of dye output is exported to the U. S., most remaining in Europe or being sent to Europe's overseas trading partners.

British Acrylic Fiber—Courtaulds, Ltd. Courtelle acrylic fiber reached the British market for the first time last month. Previously only small amounts of imported clothing of Orlon or Acrilan, originating in U. S., were seen in shops. . . . Man-made fiber output in U. K. set record in 1957—495.6 million pounds, against 482.6 million in 1956 and 471.8 million in 1955. Filament yarns returned to the 1955 high (232.4 million), while staple jumped 7.5 million to 263.2 million pounds. . . . The Textile Institute of Britain will hold its 1958 annual meeting May 12 at Edinburgh. The theme: fiber blends and mixtures.

Absorbent Stretch-Yarn—Wolfgang Goetz, G.m.b.H., Wurttemberg hose manufacturer, has come up with a new finishing process said to be capable of rendering stretch yarn for hosiery fully absorbent. Starting this month all Helanca hose sold by Goetz will have the new finish. Price will be up about 5%, but firm is said to be booked through Summer. Goetz has not been exporting hosiery.

Poland Man-Made Expansion—Poland is planning to expand man-made fiber output until 130,000-ton annual goal is reached—about 1970. About 25% would be fully man-made, mainly polyamide, polyester and acrylics. Meanwhile, a new manufacturing unit at Gorzow has begun turning out Steelon polyamide filament at annual rate of 290 tons. And the Grunberg Chemical Co. has developed a "better-than-wool" fiber, called Elana, from coal and chemical waste.

Austrian Rayon Rise—Zellwolle Lenzing, A.G., which produced some 48,000 tons of rayon staple last year, is planning to increase Austraphan cellulose film output—now 2.5 tons daily—about fourfold by end of year. Rise in rayon staple output permitted exports to reach half the

(Continued on Page 77)

FIVE HEADS ARE BETTER THAN ONE—Here conferring to find out why a run of solution-dyed spun yarn rayon upholstery cloth showed color streaks are some of the key men at Waverly Mills. Left to right they are J. B. Griffin, general superintendent; George Everington, assistant secretary; Jack Gaw, vice president for sales; C. L. McCoy, yarns buyer; Dan O. Campbell, assistant secretary.

Jones of Waverly Mills

(Continued from Page 37)

tinually widening styling possibilities to enable more textile products to find acceptance by consumers. Mills and individuals, formerly associated with the National Federation of Textiles, can be expected, Jones believes, to make an important contribution to the work of American Cotton Manufacturers Institute —a contribution pointing to a broadening of ACMI's perspectives and its ability to aid the textile industry improve its profit position. He has this belief because he is aware of the identity of NFT people with man-made fibers and their long years of close relationships with the New York fashion and apparel manufacturing industries—so increasingly important in the whole area of textile marketing.

To get a fully rounded picture of Halbert Jones, however, one has to go beyond his work as a textile manufacturer and a textile industry leader. One must know something of the man as a community and religious leader in his home state of North Carolina. The focal point in this picture is the small town of Laurinburg with its population of 13,000 and Scotland County with 27,000 people, where Laurinburg is located. And to understand the town and the county it is necessary to go far back in time, by American standards, to the middle of the 18th Century when Scotland County was settled by immigrants from Scotland. Although 200 years have brought many changes and many persons of other than Scotch blood to the region, the descendants of these original settlers have retained a prideful consciousness of their Scotch origin.

This sense of being Scotch is more than a little unusual in the United States where people of so many old world countries have settled, mixed and mingled and quickly lost recollection and awareness of their parents' or grandparents' or great grandparents' home lands. Undoubtedly, the retention of consciousness of their Scotch descent has remained strong in Scotland County people because the region has been predominantly rural and agricultural with a small population and a slow rate of growth.

At any rate, Scotland and the Presbyterian Church have been powerful influences in Laurinburg. Along with a deep attachment to the Presbyterian Church has gone a persistent loyalty to the well-known characteristics of Presbyterianism—hard work, sober and thrifty living, and, above all, a strong belief in the good of higher education, and the importance of giving freely of one's energies and money for church and community causes.

These values are expressed in action in the work of Halbert Jones as a community and church leader. For years he has been an elder and teacher of a Bible class in his church in Laurinburg. As a lay speaker on religious subjects, he has addressed many of the largest congregations throughout the Carolinas. But his special field in religious work and a large part of his efforts have been devoted to education. Among his many voluntary tasks in this field has been to serve as chairman of the Advisory Council on Higher Education of the Presbyterian Church. Also, since 1946, he has been chairman of the Board of Trustees of Flora MacDonald College, a Presbyterian institution in Red Springs not far from Laurinburg.

A College for Laurinburg

During the last few years, Jones has been active in a cause which happily combines for him his deep interest in Presbyterian education and his great devotion to his home community of Laurinburg. It has long seemed advantageous to many Presbyterians in North Carolina to combine Flora MacDonald College, Peace Junior College in Raleigh, and Presbyterian Junior College in Maxton into one school. Such a combined college they believe would be stronger, bigger and vastly more useful than the three small colleges, struggling, as so many small colleges are today, with virtually insoluble problems of finances, staff and curricula.

Inevitably with the decision to combine the three colleges came the need to decide where to locate the new Consolidated Presbyterian College. Laurinburg citizens were eager to see their town chosen, and extremely energetic in persuasive arguments for their cause. Halbert Jones, in his various capacities as chairman of the board of trustees of Flora MacDonald College and as vice chairman of the trustees of the new consolidated college has been one of the leaders in the effort to make Laurinburg worthy of being selected as the home of the planned college. Happily,

the final decision has been in favor of Laurinburg, and already the tremendous task of getting the college started there is under way. Substantial quantities of money have been raised; a site has been chosen; architects hired; educational consultants put to work; faculty committees are planning the curricula; and Laurinburg is vibrant with the excitement of this wonderful new future for the town and its citizens. In all this activity Halbert Jones, as vice chairman of the new school's board of trustees, is doing his share; and his share, people who know him in Laurinburg say, is a big one.

With his work for the new college and his demanding assignments as president of ACMI, the next 12 months will be crowded ones for Jones. But he is a man whose resilient energy and remarkable ability to switch from one area of his many interests to another, has long been the amazement of his friends. Edwin Morgan, his close associate in business and church activities for many years, says that Jones gets his relaxation not by resting, but by going from one useful activity over to another perhaps far different, one—but nonetheless demanding of time and energy. He does find a little time however, for golf now and then, and a lot of time to share an active family life with his wife, the former Elizabeth Monroe, and their four young children. ACMI members can be certain of one thing—in the year ahead the affairs of their trade association will be in the hands of an exceedingly capable, conscientious and energetic president.

Verel in Carpeting

Tennessee Eastman's modified acrylic fiber, Verel, is now being used in carpeting marketed by Sears, Roebuck. The mail order house will offer Verel carpeting for national distribution, in nine, 12 and 15-foot widths at $8.95 a square yard at retail. The new Sears carpet line, called "Radiance," will be available in five colors.

The modified acrylic fiber is reported to have good resistance to crushing and matting, soil and stains, and abrasion. Verel has a soft hand, good cleanability, is completely moth and mildew proof and also is non-allergenic. *For further information write the editors.*

New Wash-Wear Fashions

Recently introduced are women's tailored suits, dresses and sportswear that can be laundered by full-cycle automatic home washing machine, tumble dried and worn an hour after being placed in the washer. These garments are made from fabrics containing high percentages of Du Pont fibers. To meet automatic wash-and-wear requirements, special construction techniques have been developed by apparel manufacturers, along with trimmings, zippers and sewing threads that can withstand the mechanical action of home washing and tumble drying. Du Pont estimates that over 50% of home dryers in use at the end of 1958—about 8,556,000 machines—will be capable of handling "automatic wash and wear" apparel.

New Enka Hosiery Yarn

A new 30-denier four-filament nylon yarn, designed for the women's hosiery trade, is now available from American Enka Corp. The company reports the new yarn, because of its larger filament size, can be knitted without additional twist, thus effecting savings in throwing costs. The new yarn is listed at $2.41 per pound. *For further information write the editors.*

Pill-Resist Orlon Yarn

A pill-resist Orlon yarn, "Touché," has been developed by Pacific Mills for end use in sweaters, half hose and knitted apparel accessories. New mechanical processing methods combined with additional crimping effects achieve the pill-resist characteristics, and they are not due to chemical finishes, the company reports. *For further information write the editors.*

Rayon Decorative Fabric

Among the first decorative fabrics to contain Du Pont's new Ondule rayon yarn is "Torino," a casement fabric by Cohn-Hall-Marx, with a spun rayon warp and a 100% Ondule fill. Du Pont's newest rayon is a filament yarn with a random slub. Its strength and stability permit 100% use of Ondule in fabric construction or as the warp or fill, according to Du Pont. *For further information write the editors.*

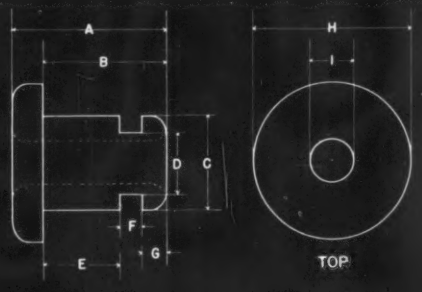
New Ciba Headquarters

Ciba Company, Inc., has started construction of its new headquarters building at Fair Lawn, N. J., within easy reach of Toms River, N. J., where most of the manufacturing sources of the firm's products will be centered. The Fair Lawn building will replace entirely the present Ciba headquarters on Greenwich Street, New York City. The new one-story building will occupy 80,000 square feet of a 5½-acre tract. Ciba is a supplier of dyes, plastics and chemicals.

MACHINERY and EQUIPMENT SECTION

MITCHELL-BISSELL *Quality* GUIDES

PORCELAIN
GROOVED
ROVERS



Available in either our Standard White Glaze or with our Blue Satin Finish.* Wire clips to fit all patterns can be furnished. We also make more than sixty different sizes of plain (ungrooved) Rovers.

MITCHELL-BISSELL CO. PATTERN NO.	A	B	C	D	E	F	G	H	I
No. 2292	3/16"	9/64"	11/64"	9/64"	1/16"	1/32"	3/64"	15/64"	1/16"
No. 1596	13/64"	5/32"	17/64"	3/16"	3/64"	3/64"	1/16"	11/32"	7/64"
No. 2454	15/64"	3/16"	.300"	1/4"	5/64"	3/64"	1/16"	3/8"	1/8"
No. 2351	1/4"	3/16"	3/8"	21/64"	3/64"	3/64"	3/32"	33/64"	15/64"
No. 2508	5/16"	15/64"	.175"	5/32"	9/64"	1/32"	1/16"	1/4"	5/64"
No. 2364	5/16"	15/64"	19/64"	15/64"	1/8"	3/64"	1/16"	3/8"	9/64"
No. 1761	5/16"	1/4"	5/16"	1/4"	9/64"	3/64"	1/16"	25/64"	1/8"
No. 2251	11/32"	1/4"	9/32"	7/32"	5/32"	1/32"	1/16"	19/32"	9/64"
No. 2549	23/64"	1/4"	21/64"	9/32"	1/8"	1/16"	1/16"	7/16"	3/16"
No. 2502	3/8"	9/32"	15/32"	25/64"	143"	1/16"	5/64"	21/32"	7/32"
No. 2181	25/64"	19/64"	17/64"	7/32"	11/64"	1/32"	3/32"	11/32"	1/8"
No. 2654	13/32"	9/32"	.325"	1/4"	5/32"	3/64"	5/64"	27/64"	1/16"
No. 2597	27/64"	23/64"	.303"	1/4"	.245"	3/64"	1/16"	3/8"	1/8"
No. 2503	37/64"	21/64"	.240"	3/16"	.070"	3/64"	.212"	7/16"	.085"

MITCHELL-BISSELL CO. • TRENTON, NEW JERSEY

Southern Representative: R. E. L. Holt, Jr. & Associates, Drawer 1319, Greensboro, N. C.

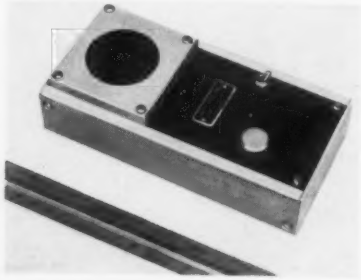
MITCHELL-
BISSELL CO.

*REG. U.S. PAT. OFF.

New MACHINERY
New EQUIPMENT

Infrared Alarm Device

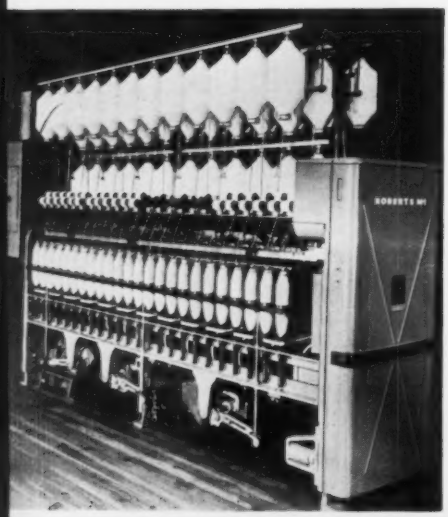
Lindly Co. has announced its new pocket-size "Infralarm," a



completely self-contained and battery-operated transistorized infrared detection device which produces an audible signal whenever subjected to infrared radiation of the order of micromicrowatts. Available in either focussed beam or wide angle versions, the Infralarm has a variety of applications, including military. *For further information write the editors.*

New Spinning Frame

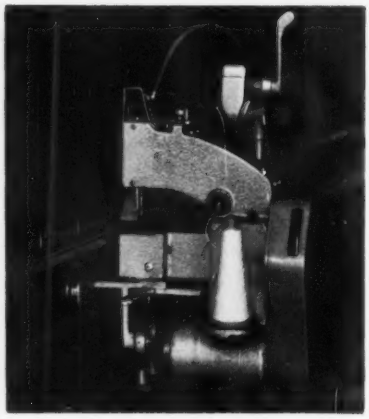
Roberts Co., manufacturers of textile spinning machinery, has started full production of its new Roberts M-1 spinning frame. The company describes the new spinning frame as highly productive. The frame is said to provide improved yarn quality with increased breaking strength and evenness, lower operating costs, increased output via higher spindle speeds, increased package sizes, elimination of roving processes, and reduced cleaning-maintenance time. The M-1 comes in three widths—the 25, 36 and 39-inch frames. *For further information write the editors.*



New Roberts M-1 Spinning Frame

Better Winder

The Kidde-Sipp winder is now being marketed by the Kidde Manufacturing Co. The winder is made in units to suit individual requirements. On units with up to 60 spindles the drive may be located at either end; on 60-spindles and up to 120-spindles, the drive is placed in the center. By the addition of a reversing switch, the rotation of the bobbin can be changed for either S or Z twist. The traverse motion, the company reports, can be easily adjusted by a hand wheel. The winder features the Alsimag self-threading guide, with doffing a full bobbin a simple one-handed operation. *For further information write the editors.*



Carpet Sewing Machine

William Birch, Ltd., England, has developed a piece-end chain stitch sewing machine for carpets in any width, according to Trumeter Co., sole agents for the machine in this country. The railway sewing machine for joining carpets for continuous processing can be fixed to the machine as a unit for a single process or can be fitted with portable stands. It will sew across a 10-foot wide carpet in less than 10 seconds, the manufacturer reports. It joins thick carpets through the pile or backing only. *For further information write the editors.*

Yarn Crimp Testers

Scott Testers, Inc. is now offering its Model BM crimp tester which conforms to standard ASTM Crimp Test Method. The new Scott model duplicates a tester used at Brighton Mills in crimp studies.

and is said to combine simplicity of construction and operation with accurate determination of value. Replacement of cotton by synthetics in duck cloths is reported to have heightened the need for a simple device for evaluating crimp. *For further information write the editors.*

W & S Pin Drafter

Warner & Swasey has issued a new circular describing its wide setover M-3700 Pin Drafter for handling all pin drafting needs. The machine, the company reports, provides all of the advantages of prior models without being limited to the drawing or comb room. Floor space requirements are approximately the same. *For free copies of the bulletin write the editors.*

Apron Textile Magnet

Eriez Manufacturing Co. has introduced its Model D spiked apron

textile magnet for preventing tramp iron damage in carding and garneting machines. Designed specifically for light duty applications in woolen and worsted mills, the unit is also adaptable for installation over feeders handling cotton and waste materials. *For free bulletin write the editors.*

Anti-Wedge Spinning Ring

A new "Anti-Wedge" spinning ring produced by Whitinsville Spinning Ring Co., features a new flange design said to permit trouble-free running of elliptical travelers at maximum speeds.

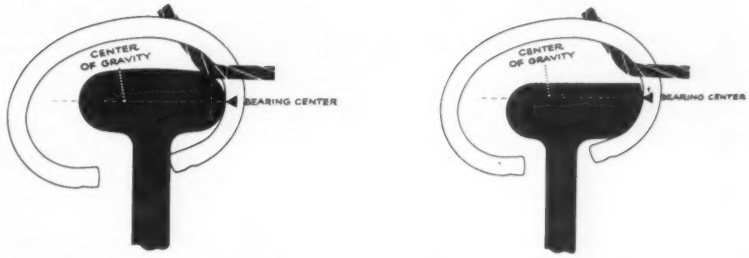
On this ring, the flange is flattened at the top, and the inner radius is contoured to the curve of the traveler. In addition, the web is offset toward the outside of the flange rather than centered. The "bearing center" of the traveler on the flange is higher than on a conventional ring.

When increased centrifugal force is exerted, the traveler on the "Anti-Wedge" ring floats in a controlled orbit without wedging or trapping the yarn, or touching the ring web. A further claim for this design is increased traveler life because: a) contoured flange provides greatly increased area of contact between traveler and flange, resulting in much lower pressure per square inch and vastly increased heat dissipation: and b) offset web location stops any contact of traveler horn with web, preventing traveler burning as well as uneven ring wear. *For further information write the editors.*

Rubber Covered Rolls

A handy pocket-size booklet, "How to Get Longer Life and Better Performance From Rubber Covered Rolls," has been prepared by Stowe-Woodward, Inc. The booklet contains instructions for handling and storage and for grinding the rolls. *For copies write the editors.*

CONVENTIONAL RING **"ANTI-WEDGE" RING**



As speed increases, centrifugal force causes traveler to dip and wedge yarn at "hinge."

At maximum speeds, traveler will not dip, cannot wedge yarn.

Whitinsville "Anti-Wedge" Spinning Ring

New Tensioning Device

A new tensioning device, the Fidelity tensioner and compensator, has been developed by Fidelity Machine Co., particularly

for yarn processors. The device uses AlSiMag ceramic pins and eyelets at key friction points. The controlled finishes are said to provide the exact texture best suited for handling yarns, especially monofilament and unthrown types. Another plus factor is the great reduction in yarn breakage. *For further information write the editors.*

1958 SpinSaVac

Parks-Cramer Co. has announced its 1958 SpinSaVac, with several new features. The type HI unit collection cabinet has a large door for easy lint removal, while air exhaustion is well diffused at low velocity. The double-shrouded air foil type vacuum impeller provides greater efficiency and higher vacuum. *For further information write the editors.*

Viscosity Measurer

Norcross Corp. has announced its new model viscometer which automatically measures, records, and if desired, controls the viscosity in chemical reactors. The model, M10, is available in explosion-proof design, fabricated with materials, tube length and flange size to meet virtually any reactor requirement. Ranges run from 0.1 to 1,000,000 cp, and the unit may be used on viscose, acetate, nylon and other synthetic fibers. *For further information write the editors.*

Steel Cord Tires for Truck, Bus Use

A new steel cord tire for "general purpose" highway truck and bus use is now being sold by Firestone dealers and stores throughout the country. Firestone has been making special purpose steel cord tires for several years. According to E. B. Hathaway, vice president in charge of trade sales, the new tire, tradenamed "Steelcord," has been developed for highway truck and bus service. It is no longer a special tire for high load capacity vehicles, he explained.

The new tire is made of steel cord instead of conventional fabric. A single cord of steel can support 385 pounds compared to 28 pounds for either rayon or nylon. Diameter of a steel cord is .048 of an inch.

The new tire is said to be a major step in development of a full line of steel cord tires. Steel construction eliminates growth and dissipates heat. It also reduces road delays caused by impact breaks.

Mr. Hathaway pointed out that the combined features add up to more original milage and higher retread potential. Normal pressure is used in the new tire making it possible to use it in truck fleets using conventional fabric tires. No special air pressure schedules are needed. According to Hathaway, the steel cord tires have been used up to 200,000 miles on the original tread. He said that on previous special purpose steel tires as much as 12 billion miles were run without a blowout. This mileage was achieved by approximately 120,000 Firestone steel cord tires.

HOW STRONG IS STEEL TIRE CORD?—Firestone, maker of this new steel cord truck tire, says that a single strand, .048 inches in diameter, supports, as shown, the new tire weighing 220 pounds.

NEW FABRICS

NEW YARNS

Dynel Work Clothing

A new group of 100% Dynel fabrics for utility work clothing is being introduced by Chrysler Textiles, Inc. The fabrics are reported to be acid and chemical resistant and feature new anti-static and silicone finishes. Woven of Union Carbide's acrylic fiber, the fabrics, named "Dynadure," are produced in 8-ounce weights, 45-inches wide and are priced from $1.90 to $2 per yard.

All fabrics are of solution-dyed Dynel yarns to insure color fastness in work garments subjected to extremes of light, corrosive gases or chemicals, and frequent launderings. Special finishes include Union Carbide's new Niatex anti-static AG-2 to protect against the buildup of static electricity, and a silicone finish to impart durable water repellency, spot and stain resistance. *For further information write the editors.*

Improved Saran Yarn

National Plastic Products Co. is introducing Spark-L-Ite, its latest Saran fabric development. A lightweight Saran monofilament with a satiny appearance and freedom from tarnishing, the softness of the new fiber is expected to find for it wide application in automobile seat covers, summer furniture tapes and fabrics, and in upholstery materials. The company reports it has the Saran characteristics of strength, durability, cleanability, and maximum fade resistance. *For further information write the editors.*

Nylon Ironer Padding

A new ironer padding, made from a new Du Pont improved heat-resistant nylon staple instead of cotton, asbestos or regular nylon, was exhibited by the American Institute of Laundering at its recent Chicago trade show. Whitehouse Nylon Products manufactured the padding from the new nylon which has been given the laboratory designation, N-11. Following extensive trade testing it was found that a needled batt made of N-11 nylon staple gave maximum service. *For further information write the editors.*

Improved Wiping Cloth

Kemi-Kleen cloth, a nonwoven fabric chemically treated to pick up dust and dirt particles, has been introduced by Lowndes Products. In this nonwoven fabric the principal ingredient of the bonding formulation used is Chemigum latex, a water-dispersion of synthetic rubber produced by Goodyear Tire and Rubber Co.

In the new wiping cloth minute pockets formed by the web-like structure of the chemically treated cloth pick up dust and dirt particles on contact. The dust pick-up formulation is carefully controlled and leaves no harmful residue on rugs, floors, furnishings or industrial equipment. *For further information write the editors.*

New Knitted Underwear Fabric

Eiderlon, produced by Industrial Rayon Corp., will be launched in the company's Spring print campaign. The new knit fabric, a blend of rayon and combed cotton, is machine washable and dryable, and is said to have good absorbency. The promotion is designed to fully exploit the softness and texture of the new fabric which is used in making women's panties and other intimate apparel. *For further information write the editors.*

TDI Opposes Fiber Labeling Bill

On Feb. 27, the Textile Distributors Institute appeared before the Senate Committee on Interstate and Foreign Commerce to oppose the adoption of the pending textile fiber labeling bill.

The Senate Committee scheduled hearings during the week of February 24 on a bill known as H.R. 469. This bill was passed by the House of Representatives in August, 1957. The bill will require showing on labels and invoices the percentage of fiber content of each fiber contained in textile fabrics. It applies to all textile fabrics other than those containing wool which remain subject to the Wool Products Labeling Act.

The Textile Distributors Institute as a member of the 29 trade associations comprising the Joint Committee on Textile Labeling of the New York Board of Trade, opposed the adoption of this legislation. The Institute also made a special appearance on behalf of its membership. Richard Deneau of Richelieu Fabrics, Inc. appeared before the Committee together with a representative of TDI's counsel, Weil, Gotshal & Manges, and testified in opposition to the bill.

Basically, the Institute is opposed to this legislation on the ground that it is its opinion that the percentage identification of fiber content would be meaningless to the consumer and would serve to create confusion. The Institute urged that no legislation be enacted and that Congress give the industry an opportunity to work out end-use or performance standards along the lines of the Proposed End-Use Standards promulgated by the Institute and submitted to the American Standards Association for incorporation into their L-22 Standards. A copy of TDI's standards was submitted to the Committee with the testimony which was given. The only organizations which testified in favor of this bill are the representatives of cotton farmers and some producers of synthetic fibers which are sold predominantly under trade-marks. Among these firms are Du Pont, Chemstrand and Celanese.

In the case of the synthetic fiber producers, is appears that they are in favor of this legislation because the required labeling of percentage fiber content will create free additional publicity for their products. It will also give the opportunity for these firms to create the impression among consumers that only fabrics containing the highest percentage of their fibers are the most desirable. As TDI pointed out in its statement, this impression would be erroneous and would result in deception. With today's scientific methods of blending different fibers and applying special finishing processes, fabrics containing mixtures of different fibers will serve more efficiently for their particular end-uses.

In the meantime, TDI urges all our members who may have interests in the states represented by any Senator on the Senate Interstate and Foreign Commerce Committee to write to these Senators and urge them to vote against this bill. Members should also ask any firms with which they may have contact in these states to write to the Senators along the same lines.

For the use of readers, we list below the names of the members of the Senate Interstate and Foreign Commerce Committee as well as their states and party affiliation:

Warren G. Magnuson, Chairman	Washington	(D)
John O. Pastore	Rhode Island	(D)
A. S. Mike Monroney	Oklahoma	(D)
George A. Smathers	Florida	(D)
Alan Bible	Nevada	(D)
Strom Thurmond	So. Carolina	(D)
Frank J. Lausche	Ohio	(D)
Ralph Yarborough	Texas	(D)
John W. Bricker	Ohio	(R)
Andrew F. Schoeppel	Kansas	(R)
John Marshall Butler	Maryland	(R)
Charles E. Potter	Michigan	(R)
William A. Purtell	Connecticut	(R)
Frederick G. Payne	Maine	(R)
Norris Cotton	New Hampshire	(R)

Adherence to Sample Cut Charges Urged

In connection with the practice of making service charges for sample cuts, the Textile Distributors Institute, through its executive secretary, Miss Hilda A. Wiedenfeld, recently issued the following bulletin for the guidance of its members:

It has been called to our attention that a segment of the cutting-up industry is again taking a concerted position against accepting the service charge of 10 cents a yard for cut yardages in lengths less than 15 yards.

As we advised you in an earlier bulletin a survey of our industry disclosed that substantially all distributors are making this charge and that it has been accepted by most branches of the cutting-up trade.

In considering your action in the face of objection by any one segment of the industry, we must call to your attention that if you waive this service charge for sample cuts for any one customer or group of customers and retain it for others, your action may constitute unlawful discrimination under the Robinson-Patman Act. Furthermore, under the Robinson-Patman Act, in these circumstances it is equally unlawful for any such customer to accept the benefit of such discrimination. It is therefore entirely proper for you to inform any customer who refuses to pay the service charge, where you are applying such charge to other customers, that their refusal constitutes a violation of law on their part.

If you fail to make this charge to a particular group of customers, your policy of making this charge may be jeopardized in its entirety. In the face of ever growing demands by customers for cut yardages and the increased economic burdens on our industry, you should consider whether you are in a position to absorb the additional costs involved if you waive the charge for this service.

Your Committee, in the interest of business stability, advises all members who are making this service charge for cuts to adhere strictly to their policy without exception. If you have any information in connection with these service charges or any experiences which you feel may be of interest, please notify the Institute.

(Continued on Page 85)

REPORT FROM JAPAN

By B. Mori

Japanese dilemma: how to increase exports and keep friends

OSAKA.—It is perhaps difficult to reconcile recent production-curtailment program with record-breaking 1957 production figures presented by Japan's rayon and synthetics industries. A closer look at the figures, however, reveals c early the downtrend of last few months of the year in rayon branch of the industry. In other words, though production for 1957 was high, it was not as high as earlier planned. The cu back will be even more apparent when figures for first quarter of 1958 become available.

Rayon Staple Output Falters—For example, production of rayon staple in 1957 totalled 690 million pounds, compared with 680 million in 1956. Japan is still leading the world, and this figure is still an all-time high. However, the fourth quarter production was 20 million pounds below a year earlier, instead of 20 million higher, as originally expected. Production of rayon filament yarn, also, rose from 180 million pounds to 210 million pounds; but it should have been 10 or 20 million pounds higher.

But Newer Fibers Output Expands—Meanwhile—the synthetic fiber industries continue to grow steadily, indicating a still-large unfilled potential demand, despite general slowness of domestic textile industries. Production figures are as follows, in millions of pounds:

	Filament		Staple	
	1957	1956	1957	1956
Nylon	35	22	14	11
Vinylon	1	8	32	24
Acetate	7	5	6	8
Saran	6	5	—	—

It is interesting to watch growth of newer synthetics in Japan, also. Production of acrylic fibers, locally developed, rose from a negligible trifle in 1956 to 1.3 million pounds in 1957; and locally-developed polyvinyl chloride fibers from under a million pounds in 1956 to 4.3 million in 1957.

Spun Rayon Cloth Output Rises—On the export side, 950 million yards of spun rayon cloth out of total production of 1.4 billion, were exported (1956: 575 million exported out of 1.1 billion production). Exports last year accounted for 400 million yards of filament rayons out of total production of 920 million (1956: exports 445 million and production 1 billion. In 1957 United States bought four million yards of rayon fabrics, about 60 per cent spuns; in 1956, 2.5 million yards, less half spuns.

Production of other principal textiles also reached higher levels in 1957: Cotton fabrics, 3.9 billion yards (3.5 billion in 1956); cotton yarn, 1.1 billion pounds (against 1 billion in 1956); silk fabrics, 240 million yards (213 million 1956); wool fabrics, 225 million yards (217 million in 1956). Exports of all these were at new highs for the post-war era. Domestic rayon pulp production rose from 365,000 metric tons in 1956 to 400,000 in 1957; while imports rose from 125,000 tons to 135,000 tons.

Trade Deficit Causes Worry—Japan's total exports have risen steadily for past ten years, and so have imports, in order to meet expanding economic activity within the country. The trade deficit each year has been offset by American military spending of various sorts. However, the Government is anxious to put the commodity trade itself on a balanced basis, against the day when American spending will dwindle. The year 1960 has been set as a goal for that balance. As a further step toward the 1960 goal, a target of exports of $3,150 million was initially set for the fiscal year which starts April 1. Some Government agencies predicted sales of $3,250 million. But as time passes the hope for achieving that level appears to diminish. The result is liable to be a stepped-up program of export trade promotion and encouragement on the part of the Government, to stimulate sales abroad.

(Continued on Page 77)

PAPERS OF THE
AMERICAN ASSOCIATION FOR
TEXTILE TECHNOLOGY INC.®

AATT

Statistical methods in fabric development

By F. James Evans,
Winfried T. Holfeld,
and Harry J. Kolb

To find out what knitted constructions were best for Orlon sweaters, Du Pont used statistical methods aided by the Univac electronic computer

THE USE of statistically designed experiments to solve technical and business problems is by no means a recent development. Such techniques have been in use for 30 or more years. However, the required mathematical manipulations connected with the statistical approach were laborious and time consuming. It has been the advent of the electronic computer which has made the statistical approach so valuable and practical, by reducing calculating time to a fraction of one per cent of the time required with a slide rule. Accordingly, about two years ago, we examined our entire textile research program. We concluded there were many problems which would lend themselves well to a statistical approach; but because we were exploring the wilderness as far as a textile problem was concerned, we singled out one particular problem as the guinea pig. This problem involved sweaters of Du Pont's Orlon® acrylic fiber. Before we discuss the actual application of statistics to this problem, perhaps a little background would be in order.

A tremendous amount of work has been done aimed at learning how to make a better sweater of Orlon, by the yarn spinners and knitters as well as by the Du Pont Co. We can say with complete confidence that with Orlon, just as with all other sweater fibers, one can make good sweaters or poor sweaters. Sweaters of Orlon can run the gamut of all combinations of good and poor performance and aesthetics.

In studying how to make a sweater with an optimum combination of good aesthetics and good performance, much of our company's work indicated that when we made a change in twist or construction to improve aesthetics, we obtained improvement at the expense of performance; or conversely, if we made a change which improved performance, it was at the expense of aesthetics.

Toward the end of 1956, we had seen this exchange of one value for another occur so frequently, we began to wonder ourselves if there was a reasonable chance of finding a practical set of sweater construction factors which would give a better combination of good aesthetics and performance. We decided to back up and take one more over-all look at this problem. In this close look, we decided first to make a list of all variables which we believed might influence either

The Speaker

O. C. Wetmore

Dr. Wetmore, who read the paper before the February meeting of AATT in New York City, is research manager for Du Pont's "Orlon" acrylic fiber. He received his B.S. degree in chemistry from Northwestern in 1940, and his Ph.D. degree in physical chemistry from New York University in 1944.

Paper presented at Feb. 5, 1958 meeting of the American Association for Textile Technology.

F. J. Evans W. T. Holfeld H. J. Kolb

The Authors

F. James Evans

Dr. Evans is a research chemist in the pioneering research laboratory of Du Pont's textile fibers department. He received his B.S. degree from Lafayette College, an M.S. from Pennsylvania State and a Ph.D. in organic chemistry from Ohio State in 1952.

Winfried T. Holfeld

Dr. Holfeld is a research chemist in the textile research laboratory of the Du Pont Co.'s textile fibers department. He holds a B.S. and an M.S. degree from Fordham University, and received a Ph.D. degree from Rutgers in organic chemistry. He joined Du Pont in 1954 after earlier experience in the pharmaceutical industry.

Harry J. Kolb

Dr. Kolb is a research supervisor in the textile research laboratory of Du Pont's textile fibers department. He holds a B.S. degree from Hamilton College, an M.S. from Haverford and a Ph.D. in physical chemistry from Northwestern University. He joined Du Pont in 1945.

aesthetics or performance of sweaters. Here is the list which resulted:

Fiber Variables:

- Crimp Frequency
- Crimp Type
- Denier
- Staple Length
- Delustrant Content
- Fiber Shrinkage
- Fiber Cross-sectional Shape
- Chemical Constitution
- Blends of Different Chemical Constitution
- Physical Properties

Yarn Variables:

- High Bulk versus No High Bulk
- Blend Ratio—Low Shrinkage/High Shrinkage
- Twist
- Number of Plies

Yarn Processing Variables:

- Spinning System
  - "Turbo Stapler"* } = Cotton, etc.
  - Pacific Converter } = Cotton, etc.
  - Woolen } = Cotton, etc.
- Yarn Treatments
  - Dyeing Method
  - Finishes:
    - Type
    - Method of Application

Fabric Variables:

- Construction (courses, wales):
  - On Knitting Machine
  - As Finished
- Machine Gauge
- Types of Stitch
- Finish (antistat, etc.)
- Finishing Techniques

* Turbo Machine Works, Landsdale, Penna.

We were (as the reader can easily imagine) quite overwhelmed with this list of variables. It was obvious that we had only one of three choices for action: we either had to accept the indications that stared us in the face—that there was no way to improve performance without sacrifice in aesthetics—or we had to plan to spend years doing some 100,000 experiments to answer the questions posed by the 28 variables; or, lastly, we might use an entirely new approach which would permit us to obtain unusual amounts of information in a reasonable length of time. This is where the statistical approach suggested itself. In short, what we wanted to do was to derive an equation which could be fed to "Univac" to carry out a series of complicated calculations from which we could arrive at optimum sweaters of Orlon acrylic fiber.

Going back to the list of variables, to cover all these variables in a sweater study, even with the assistance of "Univac", would have required manufacture and characterization of thousands of individually different sweaters. Accordingly, once having decided to look further into the statistical approach, our next step was to select the key variables in this list—the ones which were considered to be predominating ones. This selection involved weeks of consultation with many individuals who had a viewpoint to contribute. The final decision specified inclusion in the study of these five variables as being predominating:

- Denier of the high-shrinkage core fiber
- Twist multiplier (singles yarn)
- Crimp frequency—"Turbo Stapler" stuffer box crimp
- Finished construction: product of courses x wales
- Blend ratio (low-shrinkage to high-shrinkage fiber)

Regarding the "fiber crimp" variable, let us emphasize we are referring not to the crimp applied in fiber manufacture, but rather to the crimp applied to the sliver on the Turbo Stapler after stretching and breaking the tow. Also note that singles twist multiplier is listed as a variable, but not ply twist multiplier. Ply twist, however, was indirectly controlled by adjusting the actual ply twist in each case to be one half the value of the singles twist.

Having defined the specific variables in which we were interested, the next step was to define the range for each variable. The ranges we selected were as follows:

- Denier of High-Shrinkage Core Fiber:
  2, 3, 4. 5, 6, 10
- Twist Multiplier (singles yarn):
  1.5, 1.8, 2.1, 2.4, 2.7
- Crimp Frequency—"Turbo Stapler" stuffer box crimp:
  0, 5, 10, 15, 20 per inch
- Finished Construction (product of courses x wales):
  300, 350, 400, 450, 500
- Blend Ratio, low-shrinkage to high-shrinkage fiber:
  50/50, 57/43, 65/35, 73/27, 80/20

For ease of handling by the "Univac" machine, five values for each variable were selected, as shown. All other variables, outside these five, were held throughout the test as constant as was practical.

At this point, we started working closely with the statistical group of our engineering department who set up the test and who carried out the "Univac" analyses. To make every possible combination of five variables each at five different values—as would have been done by classical cut-and-try methods—would have required manufacture of 3,125 different sweaters. This would have been a pretty gigantic task in itself, but on top of making the sweaters, they would have had to be characterized; in the case we're discussing, this characterization would be for pilling and for aesthetic appeal.

Data from 27 Sweaters

The time that would have been required for the careful characterization about which we are talking is simply staggering. But surprisingly, because we were using statistics, it was determined that we would need to make only 27 carefully specified sweaters involving various predetermined levels of these five variables. Using data obtained from these 27 sweaters, additional calculations would permit us to learn essentially everything we were interested in knowing about the entire area covered by these variables. Based on the time needed to characterize the 27 sweaters actually made, the characterization of 3,125 would have required literally several hundred years. You can now perhaps begin to appreciate the tremendous fund of information which we have been able to collect in about a year's time, by making only 27 sweaters, followed by making a statistical analysis. Actually, the "Univac" calculations can be extended a little beyond the limits outlined, and we therefore have obtained information equivalent, not to manufacture of 3,125, but to manufacture of some 4,000 individually different sweaters.

So the 27 specific sweater constructions were manufactured as specified by our statistical group. The next step was to carry out the characterization already mentioned.

Characterization for pilling was pretty straightforward. Many readers have probably heard of or read about Du Pont's laboratory Random Tumble Pill Tester.* Four-inch square samples are randomly tumbled for a standard length of time in a cylindrical chamber by action of the impellor. The resulting pilled sample is given a numerical rating by comparing test samples with a group of standards. These standards were as follows: Performance Ratings: 1.0 = no pilling; 2.0 = slight pilling; 3.0 = borderline pilling; 4.0 = objectionable pilling; 5.0 = unwearable. Thus, by use of these standards, and through duplicate determinations on each of the 27 sweater fabrics, we obtained for each fabric a single number which described pilling performance.

Previous work over a period of several years has established the reliability of this laboratory test to characterize relative pilling propensity in actual wear.

Evaluation of Aesthetic Appeal

The other characterization factor of interest in this work was aesthetic appeal. Characterization of this factor is not as straightforward as that of pilling. Aesthetic appeal is a subjective reaction; no machine we know of has yet been invented which integrates all the properties making up aesthetic character. Furthermore, by no means can all people agree on whether aesthetics of any given fabric are good, poor or indifferent. Even if opinions of individuals were completely consistent, unfortunately, opinions themselves cannot be fed to the "Univac" machine. Opinions have to be put into numbers, from which the needed calculations can be carried out.

Baseball League Analogy

Converting opinions to numbers is not as difficult as you might at first believe. Let's illustrate this fact with a baseball league. Let's consider the final standing in the National League last year. The eight teams in the league play all summer to determine which is the best team. At any time during the season, we can determine how any team is doing, in comparison with the others, by looking at the percentage column calculated from the teams' won-lost records. The higher the percentage figure, the better the team is doing. Furthermore, by looking at these percentage figures, one cannot only put the teams in order from best to worst, but can also tell how close or how far apart any two teams in the league are. It is this kind of percentage figures we wished to describe relative appeal of our 27 sweaters.

One possible way of getting these sweaters in order from best to worst would have been to ask people to examine all 27 simultaneously and put them in order. If you've ever tried to do anything like this with even six or eight items, you know what a task this is. I doubt if any evaluator would have had the patience to put 27 items in order of preference.

Going back to the baseball analogy, the best team in the National League is not selected by putting all eight teams on the same field and having them all play each other at the same time. Instead, the teams play each other in pairs, each team playing each of the other seven, one at a time. With 27 sweaters, each sweater "played" 351 games—that is, there were 351 pairs to be compared without any duplication. Each evaluator had to express a preference for one of two sweaters 351 times. Each time, his preference was based on sweater hand—how the sweater felt.

20 Persons as Evaluators

Returning to the baseball analogy again, each of the National League teams plays each other, not once per season, but 22 times per season. These 22 games are spread over the whole season and take place in different ball parks with different pitchers—in short, games are played under a variety of conditions. We "played" our sweaters under a variety of conditions, using not one, but 20 separate evaluators, including both men and women. Half of the group were typical consumers, and the other half were technologists with years of experience in the field of sweaters.

With 20 evaluators each making 351 paired comparisons, a total of 7,020 "games" was played in this sweater "league" this season—a long season, to say the least. From these 7,020 games, each sweater had a certain won-lost record just as the baseball teams (permitting one to calculate a single number of each sweater, like the percentage figure for each ball team). This number described the aesthetic preference for that sweater. Through use of these averages we were able to put all 27 sweaters in order from best to worst.

So where do we stand now? We've described for you how we obtained individual numbers for each sweater which can be associated with, first pilling resistance, and second aesthetic appeal. These numbers were turned over to our statistical group who put them into an appropriate form for feeding to the "Univac" machine. Inside of three hours the "Univac"

* *Textile Research Journal*, 26, 732-735 (September, 1956), Random Tumble Pilling Tester, E. M. Baird, L. C. Legere, and H. E. Stanley.

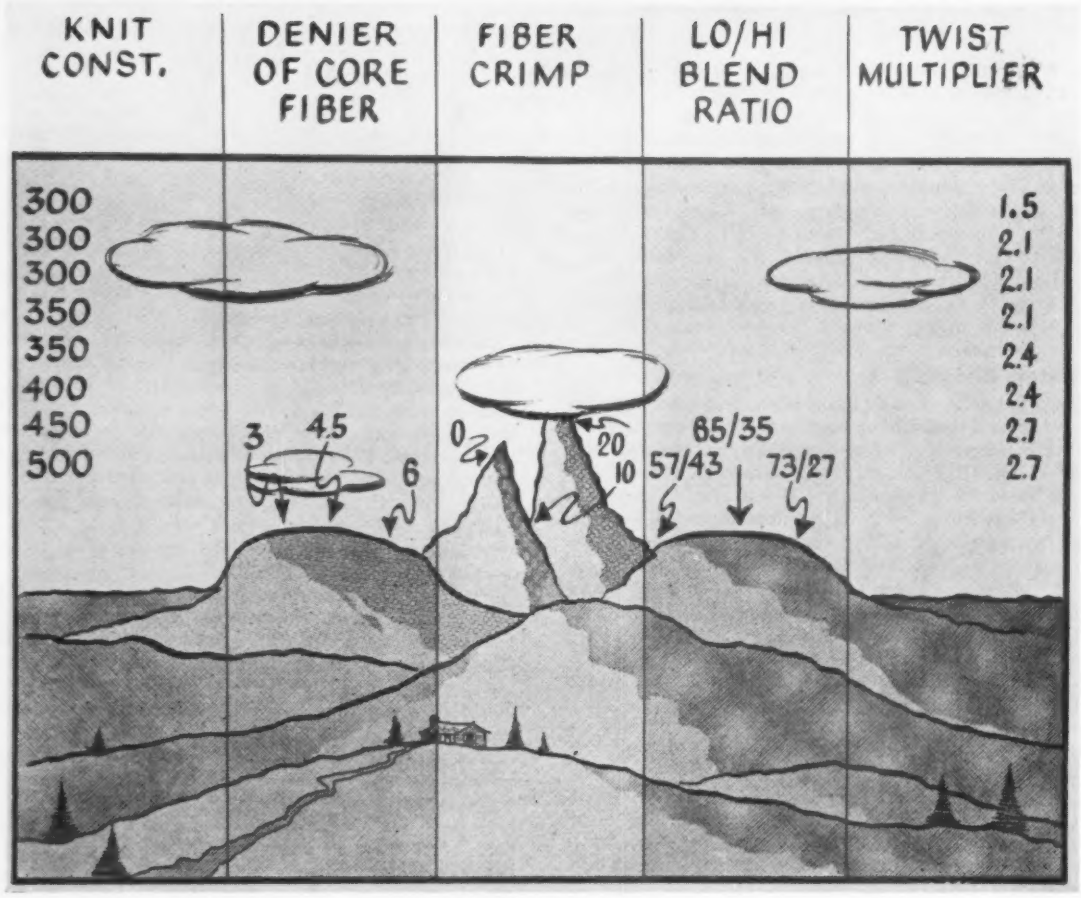


Figure 1

For explanation of this graph see text

had made all the complicated calculations necessary, the results of which permitted us to predict the pilling rating and aesthetic preference for the 4,000 different sweater fabrics mentioned earlier.

These resulting "Univac" data can be pictured simply in terms of hills and valleys on an imaginary landscape. Let us assume that the best sweaters are represented by the tops of these imagined peaks, and the worst ones in the valleys. The particular construction factors which have been used to make sweaters of Orlon acrylic fiber are probably represented by places on the sides of these peaks. All of us can undoubtedly cite changes which would take us downhill into the valleys. The problem has been to climb uphill to the peaks without losing desirable aesthetics. This is what "Univac" helped us do in its three-hour calculations—it was helping to trace out the mountain paths to the tops of these peaks. Note that there is more than one peak in this picture. This is to say that there are different combinations of these pertinent variables, all of which can lead to good combinations of pilling resistance and aesthetics.

Data from "Univac" lent themselves very well to plotting of results. If the wrong information had originally been fed "Univac", or if we had made some other mistake, plotted results would have given a discontinuous broken plot. Results like this would have meant there was no path to follow to an optimum sweater. On the contrary, actual results that we obtained gave a continuous smooth plot. The fact that the original data fed to "Univac" resulted in production of smooth curves gave us confidence that our characterization results had been reliable.

In short, we showed there was a path to follow. Furthermore, this same fact indicated that in our selection of five key variables it was likely we had not overlooked or lost control of other variables which had an important bearing on results. Otherwise, we would probably have obtained the buckshot, nonsensical type of plots.

Now we are ready to discuss conclusions. For this, let us go back just once again to the baseball analogy. A baseball team is composed of nine players. We can regard each of these sweaters we made as being a team composed of five players—the five key variables we selected. A baseball team may have nine individual stars, all top-notch at their respective positions, yet that team may not be a pennant winner. The key to a winning team is in teamwork—in how well the individual players cooperate with each other.

The key to making a good sweater is in how well the five variables selected for study work together as a team. Some believe the biggest star is fabric construction; others believe the biggest star is yarn twist. The thought has been that either one, and certainly both, of these stars is enough to produce a winner. For example, many believe that a high construction is the only way to produce a pill-resistant sweater. We were inclined to believe it ourselves. But to check this opinion, we resurveyed the "Univac" data to determine which constructions produce the least pilling, when the other four variables are allowed to assume optimum values for those constructions.

Much to our surprise we determined that there was no one optimum construction which led to least pilling. Instead, we found good pill-resistant sweaters could be made over the entire construction range of 300 to 500 courses x wales, provided the proper combination of values was chosen for the other four variables. For each different construction which was predicted to give good pilling resistance, there was a different combination of the other four variables.

The "Landscape" Example

Let us try to illustrate this pilling situation with a landscape example. When we ask a question as specific as, "What are the optimum fabric knit constructions which lead to least pilling?", we are, in effect, asking whether there are hills in a particular area of our pilling "map." If we get an answer which covers the full range of a given variable, as we did for the effect of construction, it means that there are no hills in that part of the map—that the land is all relatively flat. Let us imagine that the left-hand 20 pct of this landscape (Figure 1) describes the effect of construction on pilling. We have depicted this effect on construction by showing no hills in the area.

Another variable which has been considered to be highly important in producing a pill-resistant sweater is yarn twist. Accordingly, we resurveyed the "Univac" data to define which yarn twist multipliers would be predicted to produce least pilling, again allowing the other four variables to assume optimum values for those twists. Same answer as for construction. There was no one optimum twist multiplier, but rather, any twist could be used provided the other four variables were optimumly combined. So let us depict the effect of twist by the right-hand 20 pct of this landscape. In this area, too, the land is flat, indicating that twist multiplier, like knit construction, is not an all-determining variable.

Two other variables in this study were denier of the core fiber and blend ratio of low-to-high shrinkage fibers. When we resurveyed the "Univac" data for optimums in these variables, we did not get answers which covered the entire range studied, but instead obtained specific recommendations for best pilling resistance. This, in effect, means that there is a hill for each of these variables. However, it turned out that these hills were quite flat on the tops.

The peak here is 4.5 denier, but we have drawn a flat top on the hill because three and six denier were indicated to be nearly as good. One interesting thing about denier of the core fiber was that 10 denier turned out to be as poor as it did. We had anticipated that the heavier the denier, the greater would be the pilling resistance, hence if there was an optimum we expected it to be at 10 denier. Actually, 10 denier was indicated to be as bad or worse than two-denier core fibers.

Repeating then—in this particular case where 10-denier high-shrinkage fibers were blended with two-denier low-shrinkage fibers, poor pilling resistance was obtained. Of course, there are other ways to use 10 denier which do result in improved pilling resistance such as is obtained with fabrics of 100 pct 10 denier. The effect of blend ratio on pilling was similar to that of core fiber denier. Optimum blend ratio turned out to be 65/35, but the hill was flat on top and thus all blend ratios over the range, say, from 60/40 to 75/25, led to good pilling resistance when the other variables were properly specified. Thus pilling was indicated to be relatively insensitive to blend ratio over this range.

The fifth and last variable in this study was the crimp level applied to the "Turbo Stapler" sliver in the stuffer box (not the producer crimp). We have saved discussion of this variable until last because results turned out to be the most interesting and surprising of all. When the "Univac" data were used to select the optimum crimp level for pilling resistance, the answer was most specific. Two values of fiber crimp were carefully spelled out; namely, 0 and 20 (or perhaps even greater) crimps per inch. This double peak is depicted in the center of the landscape. Note that the highest peak is in the clouds, indicating that we don't know exactly how high this peak is. We know it is at least 20 crimps per inch high, but our study went no higher than 20; there are indications this peak extends above 20—how far we do not know. Note also that these peaks are very steep, indicating that pilling is extremely sensitive to fiber crimp.

Furthermore, there turned out to be a very deep valley for 10 crimps per inch—a commonly used value today in standard "Turbo Stapler" processing. There were no combinations of variables with fibers containing 5, 10 or 15 crimps which produced pilling resistance as good as that obtained with 0 or 20 crimps per inch; 10 cpi produced the worst pilling.

If there is a single thought which merits emphasis as a result of this study, it is that crimp put in, in "Turbo Stapler" processing, may not be the insignificant variable that to date it has been considered to be.

Broadening the Search

Having given you the feeling for the kinds of questions that can be answered with the assistance of "Univac", we are prepared now to tell you about asking a more general and perhaps even more important question. What we really want to know is how does one make the very best possible sweaters, including both pilling resistance and aesthetic appeal. Questions we just covered were restricted to the pilling factor; now we want to include aesthetics as well.

So we next used the "Univac" data to predict how these five variables should be put together to give the best possible sweaters. We are now trying to define the combinations of the five variables which are associated with the peaks in our first imaginary landscape, which represented both pilling and aesthetics. This has been done and typical, actual results are included in the following table:

SWEATER CONSTRUCTIONS COMBINING GOOD AESTHETICS WITH GOOD PERFORMANCE

Sweater No.	Denier Blend	Blend Ratio low/high Shrinkage	Crimps/Inch	Twist Multiplier	Fabric Construction (C × W)
1	2/4.5	65/35	20	2.1	350
2	2/3	73/27	20	2.1	350
3	2/3	65/35	20	2.4	450
4	2/3	73/27	20	2.4	450
5	2/4.5	65/35	0	1.8	450
6	2/6	65/35	0	1.8	350
7	2/6	73/27	0	1.8	450

An eighth sweater was prepared which was in the valley area of our "map". This one was predicted to be poor both aethetically and pilling-wise. Its construction was as follows:

Denier blend	2/10
Blend ratio	65/35
Crimps per inch	10
Twist multiplier	2.1
Fabric construction (cxw)	400

It should be pointed out that there are a very large number of combinations which can be used to obtain a good sweater. The ones listed in the table are seven of a large number of possibilities. We have actually made these particular seven sweaters as well as the predicted "poor" eighth sweater. The "proof of the pudding" resided in these eight sweaters. The success of this entire project depended upon how well the actual ratings for aesthetics and pilling agreed with ratings derived from "Univac" calculations. It was quite gratifying, to say the least, to find the actual ratings in good agreement with predicted values.

Effect of Finish Not Considered

After obtaining these eight sweaters constructed to the theoretical specifications, the first check involved a characterization of aesthetic appeal. It might be worthwhile to mention here that in no part of this work did we complicate the aesthetic ratings by application of a sweater finish. It has been our experience that a given amount of finish has a similar effect on all sweaters. However, unintended variations in the amount of finish would have introduced unintended variations in handle, which in turn, would have disguised effects of intended variables. Accordingly, the eight test sweaters, as well as the original 27, were all rated for aesthetics after complete conventional finishing procedures except for application of a finish.

These eight test sweaters were rated by comparisons against each other as well as against selected "bench-marks" from the original 27 for which complete characterization data already existed. It was thus possible to get aesthetic ratings for the newly prepared sweaters, for comparison with predicted values, as shown in the following table:

Sample Number	Predicted Rating	Actual Rating
1	80	70
2	80	75
3	80	75
4	80	90
5	70	70
6	70	70
7	70	75
8	40	[20]

Note that all of the first seven sweaters were predicted to have a rating, on a scale of 0 to 100, of 70 to 80. Actual ratings ranged from 70 to 90. Aesthetics of sweater No. 8 were predicted to be a poor 40. The actual rating was 20.

Sweaters Undergo Wear Tests

So much for confirmation of aesthetic appeal. Next, sets of all eight of these sweaters were put on wear test and worn for a total of 200 hours—which probably represents one to two seasons' wear for an average consumer. Seventy-six sweaters were involved in this wear test. Upon completion of the wear test, sweaters were rated for pilling and results were compared with predicted results. The comparison is shown in the following table:

Sample Number	Predicted Rating	Actual Rating
1	2.0-2.5	4.2
2	"	2.2
3	"	2.6
4	"	2.2
5	"	2.8
6	"	2.2
7	"	3.1
8	4.0-5.0	4.2

For pilling, the first seven sweaters were predicted to have a pill rating, after 200 hours of wear, of 2.0 to 2.5; actual ratings after wear test ranged from 2.2 to 3.1.

Sweater No. 8 was predicted to pill unacceptably —specifically, it was predicted to have a rating of 4.0 to 5.0. Pill rating in actual wear was 4.2.

These results, then, seem to give very strong support to the validity of the approach we are using to this extremely important problem.

From what we've mentioned so far, I'm afraid it might appear that we are pointing to these results and saying "Look, we now have all answers to the trade's sweater problems." This is far from being the case.

The reader will recall that at the start of this presentation we showed a list of some 28 variables we considered for possible study. From this list we selected five key variables, one of which was the denier of the core or high-shrinkage fiber. We said all other possible variables were held constant. One of these "constants" was denier of the surface fiber or low-shrinkage component in the blend. All the work we have described here was carried out with surface fibers of two denier.

Study Limited to 2-Denier Fiber

This, then is only a partial answer to sweater constructions. Furthermore, one of the important points which we have been trying to get across is that many of the effects of changing a variable cannot be predicted without a "Univac"-type study. The information which we have today is simply not adequate for predicting how to make good sweaters using surface fibers of any other denier than two.

As soon as we saw the success we were having with our two-denier study, we took steps to expand this approach to other deniers. An interesting feature of this statistical work is that the more information one builds up in a particular area, the less additional work is required to get additional answers in that area. Thus, each extension in the field of sweaters requires preparation of fewer new sweaters which, in turn, requires less analytical work and fewer wear tests.

We have chosen to expand this study to both higher and lower denier surface fibers. We now have in work surface fiber deniers of both one and three. Sweaters with one denier give a soft, luxurious hand which is uniquely different from that of two denier; or, as far as that goes, different from that of any other fiber. Three denier fibers are of interest because of the greater body imparted to these sweaters. Results from these two studies are expected before the end of this year.

So far in this paper, we have presented a complete, up-to-date status report of where we stand on apply-

ing the statistical approach to a sweater problem. We said earlier that we believe that this statistical and computer approach has application to a wide variety of textile research problems. Perhaps, it would be worthwhile to select another problem and speculate briefly on how it might be set up for a statistical analysis. This time, let's select a fabric in the woven field—a woolen-type flannel, say, from a blend of Orlon acrylic fiber and wool.

Selecting the Key Factors

The first step would be to select the key responses —the fabric characteristics of greatest interest. In making this selection, we would consider such factors as surface cover, surface smoothness, body, loft, liveliness, suppleness, drape, cover stability, dimensional stability, wrinkle resistance, press retention, washability, tailorability, durability, comfort etc. Using this kind of a list, two or three key responses would be selected. We might decide to select cover stability during wear and dimensional stability during use; that is, through wear and dry cleaning or laundering as the case might be. We would also likely want to put in a response relating to aesthetics. In the particular case we've chosen, probably the best way to handle this factor would be to have a broad response such as "fabric handle."

Next a decision would have to be made regarding how the selected responses should be measured. In the flannel case, we might determine cover stability by the laboratory Accelerotor test; dimensional stability by repeated dry cleanings or launderings; and handle by subjective ratings involving paired comparisons, as in the sweater work.

Having selected the responses, the key variables would have to be selected. For a flannel of Orlon acrylic fiber and wool we would consider such variables as blend ratio, denier, wool grade, staple length, spinning system, yarn count and twist, and probably many other factors. This kind of a list would be boiled down to the four, five or six variables considered most likely to influence the responses selected. We might end up by selecting, say, first blend ratio of Orlon and wool; second, denier of the Orlon; third, yarn count; fourth, yarn twist; and fifth, fabric pick-and-end count. All other variables would be fixed and no variations in them would be tolerated.

With five variables, the statistical design would again specify 27 different and specific fabrics which would be made under carefully controlled conditions and characterized in the laboratory. Results of the characterization would be fed to the "Univac", and from analyses of resulting data, fabric construction parameters could be specified which should produce optimum combinations of cover stability, dimensional stability and handle. The last step would be to prepare the specified optimum fabrics, to confirm the laboratory predictions by actual wear test, and lastly, of course, to merchandising the technology developed.

With any other fabric type the procedure would be much the same. If we had selected a plush as representing a pile fabric type, the responses might be retention of pile appearance during use and tailorability. Variables which might be important are yarn count, fabric pick-and-end count, napping conditions, and finished fabric weight. To repeat once again, this statistical technique is a basic one with application to almost any conceivable problem.

Many of the larger textile companies have either recently obtained or are planning to obtain a computer to assist in such functions as production control, inventory control and customer billing. These same computers can, of course, also be used for research. Computers can either be rented or purchased. However, it isn't necessary to have a computer on location to carry out a statistical study. Service by the computer manufacturer can also be rented.

What Univac Can Do

Coming back to the "Univac" machine and numbers once again, some additional numbers describing its capabilities might constitute a good "sign-off" point. The "Univac" can operate to carry out 1,200 multiplications and 1,200 additions for each minute of operation, or a total of 2,400 calculations per minute. With proper coding of information, the machine itself is capable of actually properly placing points on graphs, ready for drawing in the lines. From these lines, the human element interprets and reaches conclusions. For plotting of pilling results, the "Univac" made 115,000 multiplications and 75,000 additions, and a like number were required for aesthetic results. If all the calculations involved in the two-denier study are added together, the total is a staggering 400,000!

Discussion

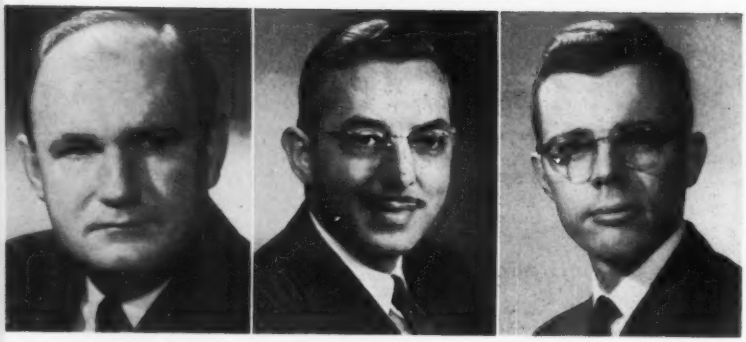
Following the presentation of the prepared paper by Dr. Wetmore, questions from the audience were answered by a panel of Du Pont men composed of D. H. Doehlert, engineering services division, engineering department; W. T. Holfeld, textile and industrial products research division; A. M. Staudt, technical service manager for "Orlon"; D. W. Gay, merchandising manager for outerwear, womenswear merchandising division of Du Pont, acted as moderator. The questions submitted to the panel and their answers follow:

J. L. BARACH (Celanese): How were the 27 constructions selected from the 3125 variables?

DOEHLERT: 27 is the sum of three numbers- 1, 10, 16. We made one sweater at the average value of all five variables. Now, the 10. There are five variables. We made two for each of the variables, one at the extreme high end, one at the extreme low end. All other variables were at the average value. Now the 16. We spread those out somewhere in between medium high, medium low values of the other variables and combinations. You can use more than 27. You could use 1, 10 and 32. But this is a relatively economical number and it covers the region fairly thoroughly.

KIRK WYATT (Turbo Machine Co.): What was the total numerical spread of esthetic analysis?

HOLFELD: We are referring here to the spread of the original 27, and that would be from 93, as the high, down to 8 or 10% choice in the paired comparisons as the low.



D. W. Gay A. M. Staudt D. H. Doehlert

Moderator (left) and Panel Members

MARTIN H. HORCHLER (Martin H. Horchler Co.) How do you run wear tests at Du Pont?

HOLFELD: In the case of our sweater wear test, we require at least ten wear testers per item to rule out variables for the wearer. So, we had a total of more than 70 wearers on this particular wear test.

CHARLES REICHMAN (Knitted Outerwear Times): Since you can cover so much more ground with a statistical approach, why did you stop at five variables? Could you not have looked at six or seven with only slightly more effort?

DOEHLERT: In 27 experiments, we looked at five variables. We could have looked at four with the same degree of thoroughness. In 25 samples, with 25 sweaters, only 2 less. This is a peculiarity of statistics. When you go the other way from 5 up to 6, it would require for relatively the same degree of thoroughness, 45 sweaters. Twenty-seven was a good choice for two reasons. If we went to four variables, we might as well go to more sweaters, to five, and five covered a relatively important set of variables as explained to us, to the statisticians, by the sweater technology people.

HENRI BRASSEUR: All tests have been made on double yarn. Does it mean that single yarn gives inferior results? How about yarn made with a Pacific Converter?

STAUDT: Those two questions properly fall into the category of Dr. Wetmore's comments about the score board. He has reported this evening on the score at the end of the first or second, or at most the third inning. As we play more innings more scores will be put up. We have not looked at those variables, we have not looked at single yarn, we have not looked at yarns from a Pacific Converter or spun from the staple route as yet.

G. R. HALDANE (Du Pont of Canada): Will a given fugitive finish affect the performance of the various optimum constructions to the same degree?

STAUDT: You recall that all sweaters were studied without any finish whatsoever. So far as Du Pont's general information is concerned, we have the feeling that the fugitive finishes have an effect on both esthetics and performance. We don't have those answers very clearly defined yet, and this study, according to Dr. Wetmore, was made without finish because these fugitive finishes wash off rather quickly compared to the total life of the sweater.

WETMORE: If it is a fugitive finish, it is gone after the first or second washing, and then it is just what we had. If it is a permanent finish, there is no telling what the result may be.

MODERATOR: Another question: How did you weight the pilling and esthetics to give a best combination?

DOEHLERT: We got two equations, one for pilling resistance and one for hand, and these equations indicated where the best sweaters were in terms of construction. We obtained graphs for these two sets of equations, and then we could look at a sweater construction first on the graph for hand, and then on the graph for pilling. If it showed up well on both graphs we made a note of it. We got quite a list of sweaters, and the sweater technologists picked off from this list the seven which were put in the wear test.

C. A. BAKER (U. S. Testing Co.): In your selection of proper hand, did you question the wearer after paired comparisons on preference or on the basis of specifics, such as, softer, harsher, etc.?

HOLFELD: The question for hand was carefully worded to rule out any possibility that we would be influencing the choice. When a pair of sweaters or sweater fabrics was handed and evaluated, the question was read in the same manner to each person. That question was: "Which fabric or which sweater feels better?" We made no limitations on the person's own subjective desirable qualities in a sweater.

MODERATOR: Here is a question: Why did you not include in your variables staple length and type of spinning?

HOLFELD: We were considering staple length. In this particular instance, we kept it constant. Of course, it is a variable that could be considered, but we can't look at them all in a program like this.

BRASSEUR: Did I understand correctly that as regards pilling, the best results were only "moderately good"; if so, is this not rather discouraging?

WETMORE: We had a scale, and we tried to take a picture of our standards—1, 2, 3, 4 and 5—to show you and we didn't get a very good picture, so we had to just show you the rating scale. A 2 rating on the scale that we use is a pretty satisfactory rating. We said we were interested in 2.5 or better as far as pilling resistance was concerned, and the way the study was set up, we cannot distinguish 2.5 from 1.2. The line was drawn at 2.5, and all those that are 2.5 or better are lumped together.

MR. MARLOWE (Bobbie Brooks): On 14 gauge machines what can you recommend in way of yarn and knitting construction which will let me sell a sweater on a money-back guarantee as "no pilling"?

WETMORE: If that gentleman will see me later, I will tell him we don't have the answer.

J. LOHRKE (J. L. Lohrke Co.): As I understand, with construction and with twist, you can get fabrics with relatively good performance. My question is, does that mean for instance, if you have a relatively low twist and a relatively high construction, you will get a certain number that you would get with a high twist and low construction?

WETMORE: The answer I would give is, it depends upon the value of the other three variables and the interrelationship of those, so you can't make any statement about combining high twist with low construction.

HOLFELD: I will not expand on that, but add that on esthetics, high twist and low construction ruins the hand, so you would stay away from something like that.

MODERATOR: The next question: Was the effect of crimp explained?

WETMORE: I suppose meaning why did it come out zero crimp and 20 crimp? Why did that happen? It was a surprise to us. I don't know that there is any logical explanation for why it should happen.

HOLFELD: The thought might be like this. At zero crimp we have smooth fibers. Previous research has shown that smooth surface in a fabric in general, in particular helped by smooth fibers, that zero crimp leads to improved performance, so that we get a smoothness of fabric here, and this is also seen in that zero crimp fabrics have a rather high luster. At 20 crimp we, of course, have the effect of the crimp holding fibers in the yarn bundles better, so that you get less pulling out of the fibers during wear, and therefore reduce pilling.

BARACH: As I understand it, you selected these first five factors that you felt were most critcial on the basis of consultation with people who were experienced in the field. Now that the study is over, is there any indication from your data that these are not the most critical factors?

WETMORE: On the contrary, the fact that our data from Univac really plotted it so beautifully, gave us the confidence that there wasn't this sixth variable which we considered to be a distinct possibility when we started off. We had no way of figuring that we were picking the five most important things. But the results came out so well, and the predictions were so satisfactorily confirmed by actual wear test, that we are inclined to believe today that we hit the five most important.

BARACH: Then why are you now extending the study by including some of the other variables?

WETMORE: Because one of the things that was held constant was something that we do want to vary to expand our knowledge in this sweater area. All sweaters are not made with 2 denier surface fibers, and you can extend it still farther, for example, by turning to different kinds of esthetics. For instance, the bulky sweater is popular today. That has an entirely different set of esthetic characteristics than some of the classic type sweaters.

MODERATOR: Here is a question: I have heard of a random balance design in which all 28 variables could have been put into perhaps 25 sweaters. Does this design work?

DOEHLERT: If you scatter your efforts over a large number of variables, quite often you are going to learn less about each variable. You can't avoid this. If you have the feeling that some of these variables are probably more important than the rest, then maybe it is better to concentrate on four or five and hope to hit the three or at least two of them.

This is a very tricky thing, and it is in the hands of the sweater technologist in this case, in my opinion, to say either, I don't know which one is important. Or to say, "Various people talk about these and various people talk about those variables, but everybody seems to agree on crimp, blend ratio, some of these, and I'd like to throw in one that I have a hunch is important." So I think the responsibility here lies with the sweater technologist to say, "I want to put my money on some of these." Rule out some for a start and learn about these few.

Outlook

(Continued from Page 34)

Dynel-Fur Blend—Meanwhile, in the exciting field of fleece and pile fabrics which have been making so much merchandising news in recent years comes an altogether new blend. It is 30% Dynel, Union Carbide's acrylic fiber, combined with 70% "precious fur fibers" in a fleece coating. The maker is Paraco Woolens and the cutter Gamboleer Fashions. Women's coats for April-May delivery to stores will retail at $80. Softness, durability, a glossy surface and light weight are some of the new fabric's advantages.

New Goodyear Plastic

Plans for construction of a $9,000,000 plant at Apple Grove, W. Va., to manufacture its new plastic, Videne, have been announced by Goodyear Tire & Rubber Co. Videne is described as a completely new polyester laminating film that can be adhered under heat and pressure to a wide variety of end products. According to Goodyear, experiments show Videne has good resistance to abrasion and outdoor ageing. The film can be laminated to glass, fabric, cotton, wool, Dacron, Orlon, nylon and vinyon fabrics without use of adhesives. When laminated to fabric, the film is said to intensify background colors in addition to giving a protective surface to the fabric. *For further information write the editors.*

SAMPLE ROLLS—Shown above are a variety of samples of Goodyear's new Videne A polyester laminating film. The film can be laminated to fabrics to achieve protective and decorative properties. Two finishes—satin and clear—are available for use with fabrics in widths ranging from ½ to 54 inches.

JERSEY IN RAINWEAR—This coat has raglan rib knit sleeves with wool jersey by Lebanon Mills. It comes in beige, grey, navy, white and red and retails at about $35.

Silicone Finished Jersey

Lebanon Knitting Mills has introduced a new group of 100% woolen worsted jersey fabrics treated with Syl-mer, Dow Corning's water, spot and stain-resistant silicone finish. The fabrics are making their appearance in a new Spring line of women's raincoats styled by Main Street Fashions, Inc. Syl-mer also is reported to make the fabric easier to work with by acting as a "lubricant" in sewing and cutting operation. Lebanon expects to sell several hundred thousand yards of the Syl-mer treated jersey in 1958, principally for women's rainwear. *For further information write the editors.*

Nylon-Fortified Twill

Cone Mills Inc. is now marketing a new fabric for work clothes, a twill made by combining fine grade American cotton with Du Pont's new 420 nylon staple. The nylon is used in the warp yarns in a ratio of 25% nylon to 75% cotton. The fabric is treated with Cone's "Coneset" wash-and-wear finish. Tests said to have been made by Du Pont reveal that the new nylon-reinforced twill will wear 70% longer than similar all-cotton twills. Also claimed for the new fabric are increased abrasion resistance, greater breaking strength and resistance to tearing. Cone plans to advertise the new fabric widely in work clothes markets. *For further information write the editors.*

Tycora Knit Gloves

A complete line of Tycora knit gloves will be introduced for the Fall season by Hansen Glove Corp. Tycora is a modified continuous filament yarn made by Textured Yarns Co. Hansen states the yarn's lightness combined with its softness and warmth make for excellent glove fit and feel. *For further information write the editors.*

NonWoven Diaper Liner

Chix Baby Products is introducing this Spring a new diaper liner, the "Super-Liner," said to be the first nonwoven all-fabric liner to be placed on the market. The new liner also will be promoted as an all-purpose wiping cloth and facial tissue. A box of six dozen liners will retail at 98 cents per box. *For further information write the editors.*

Reeves' Avisco Suitings

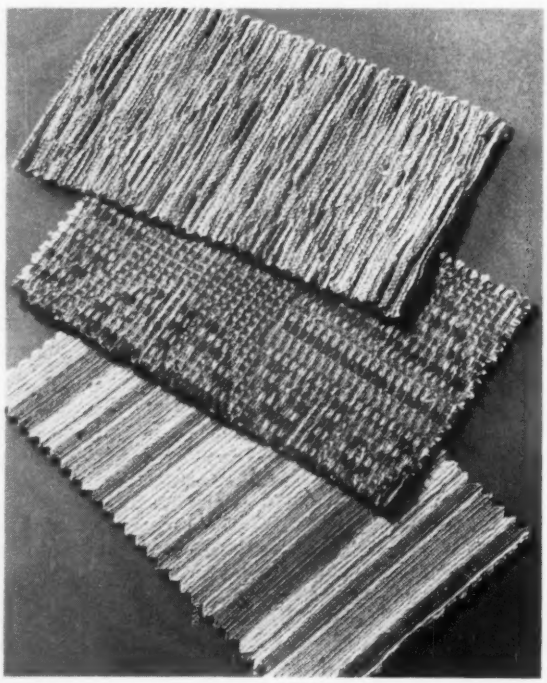
Reeves Brothers has introduced its new line of "Bounty" fabrics for the men's and boys' apparel trades. The fabrics are 14-ounce flannel and covert type suitings woven principally of American Viscose rayon. The new fabrics are said to possess a greatly improved lofty and resilient hand, an ability to retain a sharp press, and good resistance to wrinkling. Reeves was the first textile firm, and American Viscose the first fiber producer, to adhere to American Standard L 22 for finishing rayon and acetate fabrics. *For further information write the editors.*

Nylon Air Bag Cushions

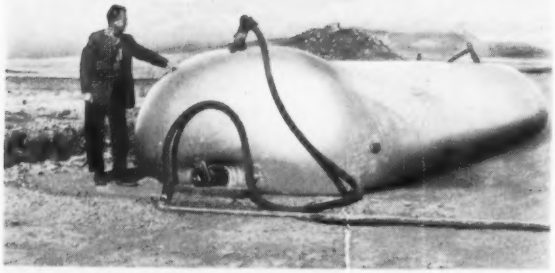
Neoprene-coated nylon fabric air bag cushions, developed by Martin Co., permit re-use of the Air Force TM 76 Matador guided missile for training and test purposes. Previously, the missile could not be re-used. Now, after three 100-foot cargo parachutes slow down the missile as it falls to earth, the ground controller releases the large nylon fabric air bags to absorb the landing shock. The air bag cushions were especially adapted for this purpose by Goodyear Tire & Rubber Co.'s Aviation Products Division. The bags are inflated by compressed air after being popped out of the underside of the missile. The bags and the parachutes also are re-usuable.

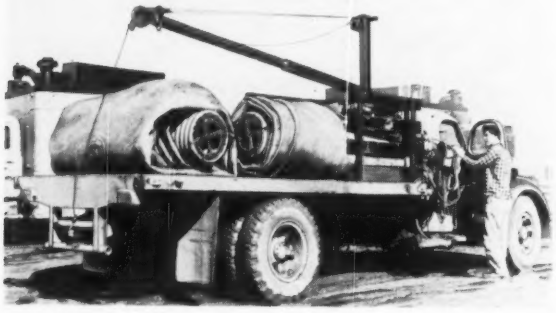
Nylon Upholstery Fabric

Greeff is offering a new group of upholstery fabrics with a face of 100% Du Pont nylon. The new group, "Trilogy," includes a two-colored textured weave, a circle pattern in a needlework weave, and a multicolor cross stripe. All three fabrics come in nine related colorways. *For further information write the editors.*



TRILOGY—Three new nylon upholstery fabrics by Greeff.





Nylon Oil Tanks

Lightweight rubberized tanks, constructed of two plies of nylon fabric coated with a special neoprene compound designed to protect the tanks against abrasion and the harmful effects of changeable atmospheric conditions, are now being manufactured by Firestone Tire & Rubber Co. The nylon tanks hold 15,000 gallons of oil. Completely collapsible into a package eight feet long by two and one half feet in diameter and weighing only about one-tenth as much as a steel tank with a comparable capacity, they can be easily moved. Cost for moving the nylon tank 50 miles is about $12.50 compared with an average cost of $175 to move a steel tank for oil storage. *For further information write the editors.*

Saran Awning Features

National Plastic Products Co., producers of Saran, announced that two new features—weather-proofing and new colors—have been added to Saran 909 awnings. The new awnings require no seasonal take-down since they will not mildew or rot in any type of weather, while the built-in colors provide maximum fade-resistance. The awnings also are non-inflammable and translucent. *For further information write the editors.*

Flannelette Has Metallic Yarns

Dundee Mills has introduced a flannelette decorated with warp stripes of Metlon with Mylar (Du Pont's polyester film.) The stripes are woven in either a solid or an intermittent effect, and are available in pastels and darker shades and also gold and silver. The company reports the stripes make this staple cloth much more attractive to consumers. *For further information write the editors.*

Knitted Orlon Shirts

Six brand manufacturers are now producing knitted shirts of 80% Orlon acrylic fiber blended with cotton that may be cared for completely in modern home laundry equipment, according to Du Pont's Product Information Service. After drying the shirts need little if any ironing. Compared with all-cotton knitted garments where high shrinkage is common, garments of Orlon and cotton are said to have good dimensional stability. *For further information write the editors.*

Europe *(Continued from Page 58)*

production volume. . . . Austrian Chamber of Commerce, which is pushing industrialization of Southern Carinthia, has paved way for talks among millmen for possible erection of four knitting, and one weaving mill. Foreign capital may be involved.

Swiss in Iraq Deal—The Swiss company Maurer has been appointed consultants for new rayon factory at Basrah, in Southern Iraq. Plant would produce 2,500 tons of rayon filament and 1,500 tons of staple per year. Basrah is a port at northern end of Persian Gulf.

Japan *(Continued from Page 66)*

U. S. Exports Below Quota—The American market is receiving special attention, of course. Exports of cotton fabrics to the U. S. last year were only 80 million yards, against the original quota of 122 million, and in comparison with 140 million in 1956. On the other hand, exports of cotton clothing and household textile goods in general filled or almost filled their quotas. Hence the Japanese insistence, in quota negotiations in Washington, on a more flexible arrangement, which will permit them to sell more high-earning made-up goods when sales of smaller-profit yard goods are lagging. At the same time, exports of silk and wool fabrics to the U. S. were higher in 1957, and will be satisfactory in 1958.

Government Watches Exports—In the broader picture, however, the attitude of the United States toward tariffs and import restrictions in general is viewed with more seriousness here than even in the U. S. itself. At this writing, the Government is investigating exports of wool sweaters and gloves to U. S., with possibility that new export controls may be imposed, to prevent these items from becoming "problems." Other export articles will feel this searching effect, too.

Non-Wovens

(Continued from Page 35)

on the other end a finished non-woven fabric, or even a ready to wear article of apparel emerges.

TO SUM UP:

(1) Non-wovens will emerge as a new industry.
(2) There will be 100% increase in volume over the next three years.
(3) The potentialities for new end uses are limitless.
(4) Non-wovens lend themselves to the most advanced and efficient processing methods—automation.
(5) The growth and profitability of the non-woven field will be directly proportionate to the promotion and marketing effort put behind it.

This report was presented at a symposium on non-woven fabrics of the Textile Section, New York Board of Trade in January.

Textile News Briefs

Machinery Firm Expands

Mount Hope Machinery Co. is enlarging floor space at its home plant, Taunton, Mass., to expand production to meet the needs of its domestic and foreign customers. New construction will increase shipping facilities, house an enlarged engineering department and provide additional general office space. The company produces a complete line of cloth handling equipment, and web handling equipment for paper, plastics and foil sheets.

Scholler Research Unit

A new, fully-automatic manufacturing unit has been added to the production-research facilities of Scholler Brothers, Inc., in Atlantic County, N. J. Special equipment permits the manufacture of all types of resins for use in the textile, paint, paper and adhesive fields. The unit also will expand the firm's research into areas of carpets and tufted textiles. The Atlantic County plant is designed to broaden the company's activities in research that Scholler's Philadelphia laboratories do not cover.

Form New Finishing Firm

Kiesling-Hess Finishing Co., Inc., has been established in Philadelphia, Pa., to handle stain-resistant and flameproof finishing for decorator fabrics in small yardages which formerly was handled by the Schwarzwaelder Co. Fred Hess, Jr., assistant to the president, and Charles H. Kiesling, vice president, of the Schwarzwaelder firm, head the new company's activities. Kiesling-Hess initially will offer Dow Corning Syl-Mer silicone finishing, Minnesota Mining's "Scotchgard" stain-repeller finishing, and flameproofing.

Nylon in Paris Showings

Nylon was used in the three Paris collections of Christian Dior, Pierre Cardin and Lanvin-Castillo, according to Du Pont's Product Information Service. Nylon tulles were featured in a large group of Dior evening dresses. Deep-pile coatings containing nylon, mohair and wool, were pre-eminent in Cardin and Lavin-Castillo bulky coats that are light in weight. A wide variety of other fabrics containing Du Pont man-made fibers, Orlon and Dacron in combination with natural fibers, included loosely woven tweeds, boucles, novelty weaves, cheviots and flannels.

Clemson Research Dep't

Dr. William T.Rainey, professor of textile chemistry and dyeing since 1948 at the School of Textiles at Clemson College, Clemson, N. C., has been appointed head of the institution's new research department which was established on February 1. Sponsors will bear the cost of applied Clemson-based research, according to Gaston Gage, Acting Dean of Textiles.

Textile Buying Guide

The American Hotel Association has issued a revised and enlarged edition of its Hotel Textile Purchasing Guide. The buying guide, priced at $7.50 per copy, covers sheets, pillow cases, bath mats, towels, napery, bedspreads, blankets, shower curtains, awnings, canopies, curtains, draperies, slip covers, upholstery, aprons, overalls, work clothing and uniforms. The new edition, which describes the L 24 minimum performance requirements for institutional textiles, also contains a section on drycleaning. *For copies write the editors.*

Chemstrand Earnings Up

Chemstrand Corp. celebrated its fifth anniversary as a producing company in 1957 by increasing earnings and sales to new record levels. Net income last year was $20,054,608, compared with $12,195,000 in 1956. Sales in 1957 rose 36% to $146,042,845.

Formed in 1949 to conduct research and development, and manufacture and marketing of chemical textiles fibers, Chemstrand began production of Acrilan in April, 1952, and nylon in November, 1953.

New Hilton-Davis Branch

Hilton-Davis Chemical Co. has opened a new customers' service and sales office for the textile industry in Trenton, N. J. Other service-laboratory-sales offices are in Cincinnati, Ohio, Greenville, S. C., and Providence, R. I. All four supply a line of naphthols, fast color bases and salts, stabilized azoic printing compounds, and pigment printing colors of the water-in-oil and oil-in-water emulsion types. Willard S. Sharp is manager of the Trenton branch with Victor R. Jensen in charge of the sales service laboratory.

Polyether Foam Bulletin

National Aniline Division of Allied Chemical & Dye Corp. has issued Technical Bulletin No. 11058 which contains six pages of new fundamental data on formulation, preparation and curing of polyether flexible foams, together with a summary of the properties and performance of the resulting products. *For free copies write the editors.*

New Chemstrand Nylon

Chemstrand Corp. has started commercial production of a new type nylon tire and industrial yarn designated as "RHB type." The new yarn, offered in 840 denier and 140 filaments, is said to offer greater strength, higher thermal resistance and better adhesion values than tire yarns currently available. Chemstrand's ordinary "HB" type nylon yarn will continue to be available to those tire companies and industrial users who desire it. *For further information write the editors.*

Indian Head Sells Plant

Indian Head Mills, Inc., has sold to a syndicate of local businessmen a surplus industrial plant at Wheeling, W. Va., which it acquired from J. L. Stifel & Sons, textile finishers, in a merger transaction. The new owners will modify the buildings to attract new industry and provide local employment. The plant consists of two contiguous three and four-story buildings with a total floor space of 250,000 square feet located on a five-acre tract one mile from Wheeling's business center.

Offers Statistics Course

The Institute of Statistics at North Carolina State College is sponsoring a one-week intensive short course in Statistics Methods for research workers in industry and the physical sciences beginning June 16. An elementary and an advanced section of the course will be held at Brevard College, Brevard, N. C. Registration fee is $125, with enrollment limited to 50 students in each section. *For further information write the editors.*

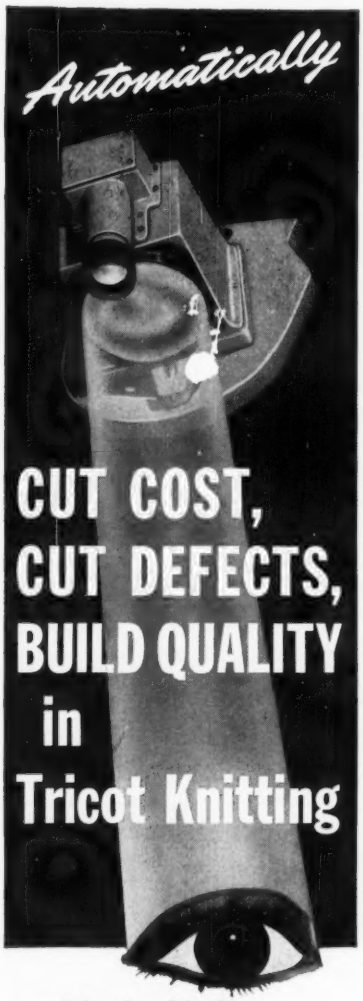
Data on Paper Fabrics

Scott Paper Co. has published a six-page brochure that describes and illustrates "Dura-Weve," a new Scott product said to have many of the qualities of fabric and the economical advantages of paper. *Free copies of the brochure, Form No. 2202, may be obtained by writing the editors.*

Knitting Research Firm

Organization of Kord, Inc., for research and development of new equipment and items for the knitted outerwear industry, has been announced by John Ashe, president of Shelley Knitting Mills. The name of the new corporation, in no way connected with Shelley, stands for Knitted Outerwear Research and Development. Ashe is serving also as president of Kord. Victor Mariani is vice president, and John Molloy is secretary-treasurer. *For further information write the editors.*

(Continued on Page 83)



...with the Lindly Automatic Photo-Scanner

Set the amazing Photo-Scanner to detect your smallest allowable defect. Automatically, it does the rest... continuously scanning the tricot—**as it's knitted**—automatically stops the machine for larger faults.

You get top quality in finished goods—quality **you** determine—a measure of quality recognized throughout the industry.

Find out how the Lindly Automatic PHOTO-SCANNER can save you time and money. Write or call today.

Other Outstanding Lindly Automatics
Automatic Yarn Inspectors
Automatic End Break Detectors
Automatic Yarn Defect Analyzer

It Pays to Know the Lindly Count

LINDLY

LINDLY & COMPANY, INC.
248 HERRICKS ROAD
MINEOLA, NEW YORK

For the DYER and FINISHER

Sandoz Nylon Brightener

Sandoz, Inc. has developed a new durable brightening agent for nylon which also may be used on blends with wool, silk or cellulosic fibers. Called Leucophor PA, the brightener is said to give a bright white with good washfastness and resistance to heat. The product's application is recommended in the bath at pH 3-5 (acetic or oxalic acid) for 15 to 30 minutes at 150 to 170 degrees F. *For further information write the editors.*

New Household Bleach

A new odorless household bleaching product, for use on delicate fabrics, has been developed by Du Pont's Electrochemicals Department. The new material, known as Oxone monopersulfate compound, will be manufactured in a large-scale unit to be constructed at Du Pont's Memphis, Tenn., plant. Du Pont reports tests have shown Oxone to be a safe bleaching material for cotton fabrics and blends of cotton and man-made fibers, as well as the finest silks or woolens. *For further information write the editors.*

Anionic Finishing Agent

Laurel Soap Manufacturing Co., Inc., recommends use of its Lauramine 314-A, a quality anionic finishing agent, for aftertreating of cotton yarns, and especially knitting yarns. The new agent, which is a white, medium-viscosity paste, is said to be fully resistant to adverse effects of ageing and it will not turn rancid. Lauramine 314-A is highly stable in neutral and mildly alkaline solutions, though acid combinations should be avoided, the company stated. *For free samples of Lauramine 314-A, write the editors.*

Colored Hotel Linens

Properly dyed colored linens withstand repeated laundering and require no special care, according to rigorous tests completed in 12 metropolitan hotels. The tests, jointly sponsored by the American Hotel Association, the National Executive Housekeepers Association and the Du Pont Co., indicated that quality colored linens are practical for use in hotels despite wide variances in laundering practices, and have a strong appeal for most guests. Individual test items were laundered as many as 197 times in some hotels. *For further information write the editors.*

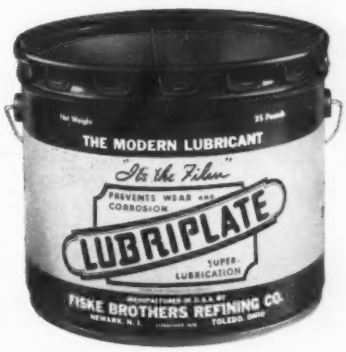
New Ciba Dyestuffs

Two new dyestuffs, a bright green for wool, nylon and silk, and a

Lubriplate No. 630-2 is a high temperature, extreme pressure, water-repellent, grease type lubricant. Ideal for the general lubrication of Industrial, Automotive, Construction, Farm and Marine Equipment. Lubriplate Grease Gun Cartridges provide an easy, quick, economical means of application. Prevent the waste and mess of hand filling. Packed 10 Cartridges in a handy carrying carton.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Write for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. LUBRIPLATE DIVISION, Fiske Brothers Refining Company, Newark 5, N. J. or Toledo 5, Ohio.



Will it Fade?

BE SURE with FADE-OMETER® and LAUNDER-OMETER® tests

A battery of Fade-Ometers at Sears, Roebuck & Co. laboratory

Launder-Ometer
Standard testing machine
of the A.A.T.C.C.

New dye colors, new fibers, yarns, prints, and the many combinations of dyestuffs all present the question of color fastness, reaction to light laundering detergents, shrinkage, bleeding and mechanical action.

Atlas-Ometer tests provide reliable, factual answers. Precision controls in the Fade-Ometer and Launder-Ometer permit careful regulation of all factors. Any test program can be duplicated exactly whenever desired in the development of a product or for quality control in production.

Dyestuffs and fabrics that stand up in Fade-Ometer and Launder-Ometer tests, will prove satisfactory in service. Producers of soft goods who can give a specific color fastness rating to the product have a sales advantage both pricewise and in consumer acceptance.

ATLAS ELECTRIC DEVICES CO., 4114 N. Ravenswood Ave., Chicago 13, Ill., U. S. A.

Sales representatives in principal cities throughout the world.

straight black with a greenish cast for wool suitings, men's hosiery and other wool, nylon and silk applications have been announced by Ciba Co. Benzyl Green F3G is applicable in neutral or acid baths, and withstands topchroming. Cibalan Black 2GL yields level results in union dyeing, especially on wool/spun nylon unions. It is said to have the excellent light fastness and simple application methods typical of all Cibalan dyes. *For further information write the editors.*

New Softener, Lubricant

Onyx Oil and Chemical Co. has announced a new textile softener and lubricant called Lurasan. The company reports it is applicable as a softener on cotton with chlorine-resistant resin finishes, as a lubricant and plasticizer on cotton for texturing and mechanical effects, and in general fabric applications for gaining luster in napping and for preventing boardiness during heat setting. *For further information write the editors.*

Improved Wool Scouring

Arnold, Hoffman & Co. is marketing a non-ionic surface active agent, Synthrapol PWS, for neutral scouring of raw wool. The company reports semi-bulk trials show that, through use of Synthrapol PWS and Glauber's salt as neutral scouring agents, scouring costs can be reduced to about one-third the amount calculated for the conventional soap-and-soda scour in a four-bowl machine. A prime benefit in scouring raw wool under neutral conditions is that alkali damage is avoided and, consequently the processed fiber has better color and handle. *For further information write the editors.*

New Plastisol Resin

The Chemical Division of Goodyear Tire & Rubber Co. has announced a new PVC plastisol resin, Pliovic VO, designed for use in plastisols and organosols. Properties said to be imparted to plastisols with the new resin are low initial viscosity, viscosity stability, electrical properties, and low water absorption. The resin is reported to be of high purity and suggests new possibilities for vinyl dispersions. *For further information write the editors.*

Introduce New Resin

National Starch Products has started full-scale production of Resyn 2203, a new vinyl-acrylic copolymer emulsion. Resyn 2203 is composed of fine and uniform particles to assure greater surface coverage and stronger bonding properties, the company reported. The resin film combines good clarity with high oil and water resistance. The new product is internally plasticized and virtually odor-free. *For further information write the editors.*

U. S. MAN-MADE FIBER PRICES

This schedule lists the prices of yarns, staple and tow as reported by the producers in March 1958. All prices are given as subject to change without notice.

RAYON FILAMENT YARN

American Bemberg

Current Prices

Regular Production Reel Spun Yarn

Den/Fil	No Turn Skeins	Turned* Skeins & Cones	8½ Turns	High Turn Skeins & Cones 12 Turns	15 Turns	18 Turns
40/30	$1.49	$1.95	....	....	....	$2.08
50/36	1.24	1.50	....	....	....	1.80
65/45	1.14	1.30	....	$1.53	....	1.58
75/60**	1.04	1.18	....	1.41	$1.46	1.49
100/74**	.95	1.08	....	1.33	1.38	1.44
125/60	.94	1.05	$1.09	1.30	....	....
150/120	.93	1.02	1.12	1.27	....	....
300/225	....	.95	....	....	1.08	....
900/372	....	.85	....	....	....	....
1800/744	....	.85	....	....	....	....

* Turn includes twists up to 6 turns on 40 and 50 denier, and up to 5 turns on heavier deniers.

** Spun Dyed Cupracolor Black 15¢ per lb. extra.

"44" HH Spool Spun Yarn

Den/Fil	No Turn Tubes	No Turn Beams	5 Turn Beams	5 Turn Cones	12 Turn Beams	12 Turn Cones	15 Turn Cones
40/30	$1.35	$1.35	....	....	....	....	....
50/36	1.00	1.00	....	....	....	....	....
65/45	1.05	....	....	....	....	$1.42	....
75/45*	.97	....	$1.08	$1.08	$1.31	1.31	$1.39
100/60*	.89	....	1.03	1.03	1.23	1.23	1.31
125/60	.84	....	.99	.99	....	....	....
150/90*	.77	....	.81	.81	1.15	1.15	1.24
150/120	.81	....	....	.93	....	....	....

* Available also in Spun Dyed Cupracolor Black at 15¢ per lb. extra.

"44" HH "Parfe" (Type 51) Spool Spun Yarn

Den/Fil	No Turn Cones	5 Turn Cones	5 Turn Beams	12 Turn Cones	15 Turn Cones
50/36	$1.60	$1.85	$1.85	....	....
75/45	1.45	1.55	1.55	$1.75	$1.85
100/60	1.35	1.45	1.45	1.65	1.75
150/90	1.18	1.25	1.25	1.60	1.70

Nub-Lite (Short Nubbi)

Code	Den/Fil	2½ Turn Natural Cones	2½ Turn Cones*	5 Turn Natural Cones	5 Turn Cones*
1515	160/90	....	....	$1.45	$1.35
1519**	155/90	....	....	1.45	1.35
2008	200/120	....	....	1.06	.96
3002	315/180	$1.10	$1.00	....	....
4011	410/224	1.10	1.00	....	....
6001	600/360	1.08	.98	....	....
8001	860/450	1.08	.98	....	....

* Basic price for cones when dyed. Dyed Colors 30 and 35 cents above basic price. Prices based on 200 lb. dyed lots only. Prices for natural yarn skeins same as natural cone prices.

** Code 1515 can be run in warp or filling.

CUPIONI Type B

Code	Den/Fil	2½ Turn Cones	5 Turn Cones
9610	50/30	....	$2.14
9650	70/45	$1.64	....
9660	100/60	1.48	....
1545	150/90	1.25	....
9720	200/120	1.20	....
9730	285/135	1.10	....
9792	450/225	1.10	....
9814	600/372	1.07	....
9837	940/372	.97	....

"Spun Dyed Cupracolor is spun 150, 285, and 940 deniers at 35¢ per pound extra. Cupracolor Black comes in all deniers."

STRATA SLUB

Code	Den/Fil	Turned Cones	Price
9747	275/225	3½	1.20
9798	450/372	2½	1.10
9823	600/372	2½	1.05
9847	960/372	2½	.97
9885	1290/372	1½	.95
9934	2680/744	1½	.95

"Spun Dyed Cupracolor is spun in 600 and 960 deniers at 35¢ per pound extra."

FLAIKONA

Code	Den/Fil	Turned Cones	Price
9669	150/148	2½	$1.35
9769	300/224	3½	1.40
9807	600/405	2½	1.20
9840	900/450	2½	1.10
9924	2000/744	2½	1.00

"Spun Dyed Cupracolor Black 35¢ per pound extra."

Terms: Net 30 days, F. O. B. shipping point. Minimum freight allowed to consignee's nearest freight station east of the Mississippi River. To points west of the Mississippi River minimum freight allowed to Memphis, Tennessee. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold F. O. B. delivery point.

American Enka Corp.

Current Prices

Effective December 4, 1956

Standard Quality Yarns

Standard Quality Rayon Yarns

A. Natural

Den./Fil.	Luster	Turns		Weaving Cones	Beams	Skeins Long	Skeins Short	Cakes	Knitting Cones
50/18	E	5	S						1.56
50/20	B	2.5	S&Z					1.45	
75/10	B	3	S&Z					1.08	
75/18	E	4	S						1.22
75/30	B	2.5,4	S&Z	1.17	1.17			1.08	1.17
75/30	B	8	S	1.22			1.37		1.22
75/45	P,E	2.5, 4,5	S&Z	1.17	1.17	1.23	1.37	1.08	1.17
75/60	B,P	3,4	Z	1.22				1.10	1.22
100/14	B,P	3	S&Z				1.12	.96	
100/40	B,E	12	S						1.27
100/40	B,P,E	4,5	S&Z					.96	1.04
100/40	B	6	S	1.10					
100/40,60	B,P	2.5,4	S&Z	1.04	1.04	1.08	1.12	.96	1.04
100/60	E	2.5	S	1.06	1.06			.98	
125/40	E	3	Z						.96
150/40	B,P,E	2.1,3	S&Z	.91	.91	.94	.99	.86	.90
150/40	B,E	5	S&Z	.91		.94	.99	.86	
150/40	B,E	8	S&Z	.97		1.00	1.05		
150/40	B,P	10	S&Z	1.03	1.03				
150/90	B,E	2.1	S&Z	.92	.92			.87	
200/40	P	3	Z						.82
200/40	B,P	8	S				.95		
250/60	P,E	2.4	Z						.75
300/50	B,E	3	S	.73	.73				
300/60,120	B,P,E	2.1	S&Z	.73	.73		.76	.71	.73
300/60	B	3.5	S	.73	.73		.76	.71	
300/60	B	4.3	S	.76	.76			.74	
300/60	B	7	S	.83					
300/40,120 H.T.	B	2.5, 3,4	S	.75	.75				
450/80	B	3	S	.70	.70		.72	.68	
600/80,120	B,E	3	S	.69	.69			.67	
900/120	B	3.4	S	.68				.66	
900/120 H.T.	B	3.6	S	.70				.68	

"Jetspun" Colored Yarns

Den./Fil.	Tenacity	Turns	Weaving Cones	Beams*	Cakes	Colors
100/40	Regular	2.5S	1.39	1.39		All
150/40	Regular	2.1S	1.26	1.26		All
200/40	Regular	8.3S	1.27			All
450/80	Regular	3.0S	1.05			All
300/40	High	3.4S	1.10	1.10		All
600/80	High	3.4S	1.06			All
900/120	High	3.4S	1.05	1.05		All

Registered trade mark of American Enka solution dyed rayon yarn.

* Single color.

"Skyloft"

American Enka's Lofted Filament Rayon Yarn
Natural and Jetspun (R)
Types Available and Prices

Denier	Den/Per Filament	JETSPUN Natural	JETSPUN Black	JETSPUN Other Colors
2200	15	$.67	$.79	$.84
2700	15	.65	.75	.82
4300	8	.64	.74	.81
5300	15	.63	.73	.80

American Viscose Corp.

Effective December 14, 1956

Graded Yarns

Denier	Filament	Type	Short Skeins	Long Skeins	All Cones Beams Tubes	Cakes
50	20	Bright & Dull	$	$1.59	$1.56	$1.45
60	10	Bright	....	....	1.41	1.30
75	10-30	Bright	1.24	1.20	1.17	1.08
75	30	Dull	....	....	1.17	1.08
100	14-40	Bright	1.12	1.07	1.04	.96
100	60	Dull	....	....	1.06	.98
150	24-40-60	Bright & Semi-Dull	.99	.94	.91	.86
150	40	Dull	....	....	.91	.86
150	90	Dull	....	....	.92	.87
200	10-44	Bright	.90	.85	.82	.78
250	60	Semi-Dull & Dull	.82	.78	.75	.73
300	44	Bright & Dull	.79	.76	.73	.71
300	234	Dull	....	....	.75	.73
300	120	Rayflex 6-Turns	....	....	.85	.83
450	100	Bright	....	.72	.70	.68
600	100	Bright	....	.71	.69	.67
900	60-100-150	Bright	....	.70	.68	.66
1200	75	Bright	....	.67	.65	....
2700	150	Bright	....	.70	.68	....

Extra Turns Per Inch

75	30	Bright 6-Turns	$1.36	$1.32	$1.29	$ ....
100	40	Bright 6-Turns	1.24	1.19	1.16	1.08
150	40	Bright 6-Turns	1.09	1.04	1.01	.96
200	44	Bright 6-Turns	....	.95	.92	....
300	15	Bright 5-Turns	....	....	.78	....
300	44	Bright 6-Turns	....	.86	.83	.81
600	30	Bright 5-Turns	....	.76	.74	.72

Rayflex Yarns

75	30	Rayflex	$	$	$1.20	$1.11
100	40	Rayflex	....	....	1.07	.99
150	60	Rayflex	....	....	.94	.89
200	75	Rayflex	....	....	.85	.81
300	120	Rayflex	....	....	.75	.73
300	120	Rayflex 6-Turns	....	....	.85	.83
450	120	Rayflex	....	....	.72	.70
600	234	Rayflex	....	....	.71	.69
900	350	Rayflex	....	.72	.70	.68

Super Rayflex Yarns

600	490	Super Rayflex	$	$	$ .78	$ ....
900	720	Super Rayflex	....	....	.77	....

Thick and Thin Yarns

150	40-90	Bright & Dull	$	$	$1.15	$ ....
200	75	Bright & Dull	....	....	1.05	....
300	120	Bright & Dull	....	....	.95	....
450	100	Bright & Dull	....	....	.92	....
490	120	Bright & Dull	....	....	.95	....
900	350	Dull	....	....	1.00	....
920	120	Bright & Dull	....	....	1.00	....

Colorspun Yarns

Currently producing regular and high tenacity at premiums at $.35 per pound.

Viscose Filament Yarns

The following material deposit charges are required:

Metal Section Beams	$170.00 each
Wooden Section Beams	55.00 each
Wooden Section Beam Crates	30.00 each
Metal Section Beam Racks	75.00 each
Metal Tricot Spools—14" flange	30.00 each
21" flange	60.00 each
32" flange	150.00 each
Metal Tricot Spool Racks—14" flange	135.00 each
21" flange	100.00 each
32" flange	75.00 each
Wooden Tricot Spool Crates	20.00 each
Cloth Cake Covers	.05 each

Same to be credited upon return in good condition—freight collect.
Terms: Net 30 days.

Celanese Corp. of America

Current Prices
Effective December 14, 1956

Den.	Fil.	Twist		Beams	Cones	Cakes	Non Shrunk Tubes
#49 and #14 Production							
75/30/3	Bright			....	$1.11	$1.03	....
100/40/2Z	"			$.96	....	....	....
100/40/3	"			.98	.96	.91	....
100/40/5	"			....	1.02	.97	....
100/60/3	"			....	.97	.92	....
125/40/2Z	"			.94	.92	....	....
150/40/3	"			.89	.85	.80	....
150/40/2Z	"			.87	....	....	....
150/40/5	"			....	.91	.86	....
150/40/8	"			....	.97	.92	....
150/40/0	"	NS		....	.71	....	....
300/50/3	"			.72	.71	.69	....
300/50/0	"	NS		....	.63	....	....
#20 Production							
150/40/3	Bright			.87	.83	.78	....
150/40/0	"	NS		....	.71	....	....
150/40/2Z	"			.87	....	....	....
300/50/3	"			.72	.71	.69	....
300/50/0	"	NS		....	.63	....	....
#20 Production							
100/40/3	Dull			....	.96	.91	....
100/60/2Z	"			1.00	....	....	....
100/60/0	"			....	.93	....	....
100/60/5	"			1.04	1.02	.97	....
150/40/3	"			.87	.83	.78	$.77
150/40/0	"	NS		....	.71	....	....
150/90/3	"			....	.90	.85	....
250/60/0	"	NS		....	.67	....	....
250/60/3	"			....	.75	....	.70
#52 Thick & Thin Rayon							
150/60/3	Bright			....	1.15	....	....
450/120/3	"			....	.89	....	....

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.
Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices
Effective with orders December 7, 1956

Bright and Dull

Den.	Fil.	Turns/ Inch Up to		(A) Cones, Beams, Tubes	Cakes
40	20	3	Textile "Cordura"*	$1.90	$1.85
50	20	3		1.63	
50	20	3	Textile "Cordura"	1.65	1.60
50	35	3	Textile "Cordura"	1.70	1.65
75	10	3		1.17	1.08
75	30	3		1.17	1.08
100	15	3		1.04	.96
100	40	3		1.04	.96
100	60	3	Dull	1.06	.98
125	50	3		.96	.90
150	40	3		.91	.86
150	60	3		.91	
150	60	3	Textile "Cordura"	.92	.87
150	90	3	Dull	.92	.87
150	100	3	Dull	.92	.87
300	50	3.5		.73	.71
300	120	3	Textile "Cordura"	.74	.72
450	72	3		.70	.68
600	96	3		.69	.67
600	240	3	Textile "Cordura"	.70	.68
900	50	3		.68	.66
900	144	3		.68	.66
1165	480	3	Textile "Cordura"	.68	.65
1800	100	3		.68	
2700	150	3		.68	

Thick and Thin

100	40	3	#7	1.38	1.38
150	90	3	#7	1.15	1.15
200	80	3	#7	1.05	1.05
450	100	3	#7	.89	.89
1100	240	3	#60	1.00	1.00
2200	480	3	#60	.95	.95

(A) 2¢/lb. additional for cones less than 3# and tubes less than 2#.
Terms: Net 30 days.
Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.
* "CORDURA" and "SUPER CORDURA" are DuPont's registered trade-marks for its high tenacity rayon yarn.

Industrial Rayon Corp.

Effective December 21, 1956

Denier	Filament	Turns per In.	Type	2.8 Lb Cones	4.4 Lb Cones	Beams	2.2 Lb Tubes	4.4 Lb Tubes
100	40	2.5 "S"	Bright	1.04		1.04		
150	40	2.5 "S"	Bright	.91		.91		
150	40	2.5 "S"	Luster #4	.91		.91		
150	40	2.5 "S"	Bright intermediate strength	.92				
200	20	2.5 "S"	Bright	.82				
200	40	2.5 "S"	Bright	.82				
300	44	2.5 "S"	Bright	.73		.73		
300	80	2.5 "S"	Bright	.73		.73		
300	80	2.5 "S"	Luster #4	.73		.73		
300	80	2.5 "S"	Bright extra strong	.75		.75		
450	60	2.0 "S"	Bright		.70	.70		
600	90	1.5 "S"	Bright		.69	.69	.69	.69
900	50	2.0 "S"	Bright		.68	.68	.68	.68
900	150	1.5 "S"	Bright		.68	.68	.68	.68

Luster #4 is semi-dull.
Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges prepaid with transportation allowed at lowest published rate to all points east of the Mississippi River. PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

North American Rayon Corp.

Current Prices

First Quality Yarns	Den/Fil	Twist	Cones: Knitting* Cones	Cones: No Twist Knitting Cones	Cones: Beams, Tubes** and Weaving Cones	Untreated Cakes
	75/30	3.5			$1.17	$1.08
	75/30	7			1.30	
	75/30	15			1.37	
Normal	75/30	20			1.40	
Strength Yarns	100/40/60 Brt.	3.5			1.04	.96
NARCO	100/40/60	12			1.22	
	125/52/60	3			.96	.90
	125/52	10			1.13	
	150/42/60/75	3	$.90		.91	.86
	150/42	0		$.71		
	300/75	3	.73		.73	
	300/75	0		.63		
	600/98	3	.69		.69	
	900/46	2.5	.68		.68	
	1800/92	2.5	.68		.68	
Semi-High Strength Yarns Hi-NARCO	300/75	3			.74	

* Oiled Cones $.01 Per Pound extra for Graded Yarns only.
** 1 lb. tubes $.02 Per Pound extra for Graded Yarns only.
Terms: Net 30 days, F.O.B. shipping point, minimum freight allowed to consignee's nearest freight station east of the Mississippi River. To points west of the Mississippi River minimum freight to Memphis, Tennessee allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold F.O.B. delivery point.
Prices subject to change without notice.

RAYON HIGH TENACITY YARN and FABRIC

American Enka Corp.

Effective June 1, 1957

Tempra (High Tenacity)

Denier	Elongation	Beams & Cones
1100/480	Low	.59
1230/480	High	.59
1650/720	Low	.55
1820/720	High	.55
2200/960	High & Low	.54

Suprenka (Extra High Tenacity)

1650/720	Low	.58
1900/720	High	.58
2200/960	Low	.57

Terms: Net 30 days, f.o.b. Enka, North Carolina, or Lowland, Tennessee; minimum freight allowed to first destination east of the Mississippi River.

News

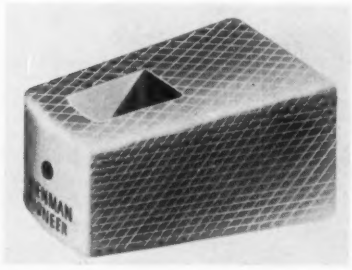
(Continued fr. Page 78)

Denman Research Expanded

Wilson B. McCandless, president of Denman Textile Rubber Co., Cuyahoga Falls, Ohio, recently announced that Harold J. Johnson

Harold J. Johnson

has taken up his new duties with Denman. Johnson was appointed assistant general manager in charge of research and development at Denman in February. In his new post Johnson will direct



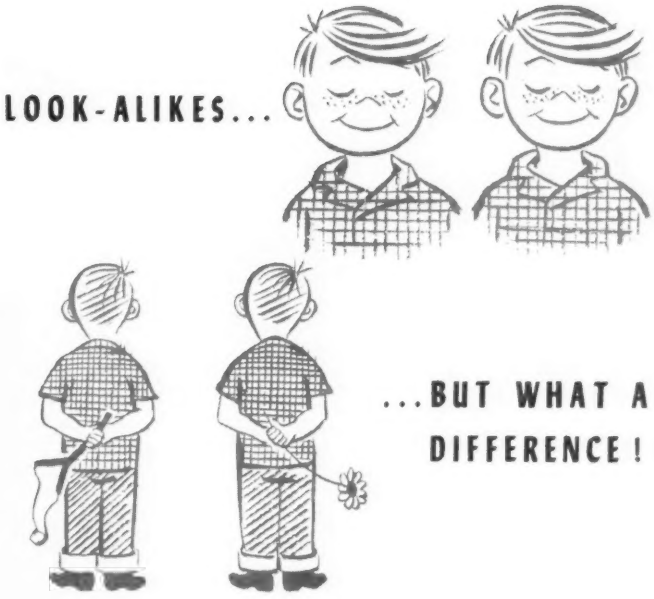
Denman Pioneer Light Picker.

utilization of greatly expanded laboratory and quality control facilities installed at the Denman plant to improve the quality of Denman Pioneer pickers and other loom parts.

X-Ray Crystallography

"X-Ray Crystal Structure," by Dan McLachlan, Jr. of Stanford Research Institute, is designed to fill the gap in books published on x-ray crystallography between the popular style and those written for advanced scholars. McLachlan gives a logical modern picture of the advanced phases of crystal structure analysis by x-ray methods, tells how to determine the atomic positions with a crystalline material. He stresses the theory of space groups, single crystal cameras, Fourier methods, computing devices, and combines theoretical background with practical applications. The 340-page book, published by McGraw-Hill, is illustrated and priced at $15 per copy. *For further information write the editors.*

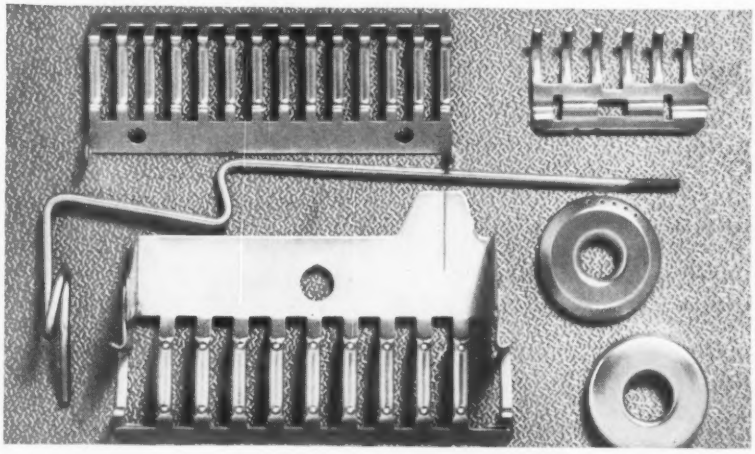
(Continued on Page 87)



The fact that all Hard Chromium Plating looks the same may mislead you.

During 24 years of successful experience, we have proven many times to our customers (many of whom have been with us for 20 years or more) that our fast, efficient service and "know how" mean "dollars in their pockets."

Why go through the trial and error method when we are experts in our chosen field . . . top quality Hard Chromium Plating.



The leading name in textile Hard Chromium Plating, both satin and polished finish.

Walhard

WALTON and LONSBURY

79 NORTH AVENUE ATTLEBORO, MASSACHUSETTS

American Viscose Corp.

Effective November 1, 1956
Revised June 10, 1957

Super Rayflex

Denier	Filament	Twist	Beams	Cones
1100	980	0	$.63	$.63
1100	980	4.1Z	.63	
1100	980*	0-2Z	....	.63
1650	980	0	.58	.58
1650	980	4.1Z	.58	
1780	980*	0-2Z	....	.58
2200	980	0	.57	.57

* High Elongation Sewing Yarn.

Tire Yarn

1100	490	2.5Z	.59	
1650	980	0	.55	.55
1650	980	3.6Z-4.1Z	.55	
2200	980	0	.54	.54

High Strength

1150	490	2.5Z	.59	.59
1230	490	3.1Z	.59	.59
1650	980	4Z	.55	.55
1875	980	4Z	.55	.55

Super Rayflex, Tire Yarn and High Strength yarns are sold "Not Guaranteed for Dyeing."

Tire Fabric

	Tire Yarn	Super Rayflex
1100/490/2	$.69	$.73
2200/980/2	.625	.655

Above prices based on 80% minimum Carcass, 15% maximum Top Ply, 5% maximum Breaker.

1650/980/2

* Production Factor

525	Open	Carcass	$.635	$.665
300	490	Top Ply	.645	.675
115	275**	Breaker	.67	.70

* Determined by dividing total ends by picks.

** Orders limited to 5% of total 1650 Fabric booked for any given period.

The following deposit charges are made on invoices:

Beams	$55.00 each
Crates (Metal)	75.00 each
Fabric Shell Rolls	3.50 each

Same to be credited upon return in good condition—freight collect
Terms: Net 30 days.

Celanese Corporation of America

Effective December 27, 1955
Supersedes September 12, 1955

Fortisan Yarn Prices

Denier	Packages	Natural	Black
30/2.5/40	2 lb. Cones	$3.00 lb.	$3.35 lb.
60/2.5/80	4 " "	2.40 "	2.75 "
90/2.5/120	4 " "	2.25 "	2.60 "
120/2.5/160	4 " "	2.05 "	2.40 "
150/2.5/180	4 " "	1.95 "	2.30 "
270/2.5/360	4 " "	1.85 "	2.20 "
300/2.5/360	4 " "	1.85 "	2.20 "
60/2.5/80 Olive Green—Spun Dyed—OG106		4 lb. Cones	3.50 lb.

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U. S. A. east of the Mississippi River.

Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.

Fortisan-36 Rayon Yarn
Bright

Denier and Filament	Twist	4# cones	8# cones	Tubes	Beams
270/280	0.8Z	$2.30			
300/280	0.8Z	$2.05			
300/280	3Z	$2.20			
400/400	0.8Z	$1.75			$1.70
400/400	0			$1.75	
800/800	0.8Z	$1.25	$1.25		$1.20
800/800	3Z	$1.40			
800/800	0			$1.25	
1600/1600	0.8Z	$1.15	$1.15		$1.10
1600/1600	2½Z	$1.30			
1600/1600	0			$1.15	

Terms: Net 30 days. Shipments prepaid to any destination in U. S. A. East of the Mississippi River. Shipments West of the Mississippi will be made on a collect freight basis and allowance will be made for the lowest transportation cost to the point of river crossing.

Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices
Effective with shipments April 17, 1957

"Super Cordura"*

Den Fil	Turns/in	All Packages
1100-720	2	$.63
1200-720	2	.63
1530-960	2	.61
1600-960	2	.58
1650-1100	2	.58
1800-1100	2	.58
2200-1440	2	.57
2400-1440	2	.57

Terms: Net 30 days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

* "CORDURA" and "SUPER CORDURA" are DuPont's registered trade-marks for its high tenacity rayon yarn.

Industrial Rayon Corp.

Effective November 1, 1956

Unbleached Bright High Tenacity Yarns

SINGLE END BEAMS AND CONES:

Den.	Fil.	Turns Per In.	4.4 Lb. Cones	4.4 Lb. Beams	2.2 Lb. Tubes	4.4 Lb. Tubes
1100	480	1.5 "Z"	.59	.59	.59	.59
1650	720	1.5 "Z"	.55		.55	.55
2200	1000	1.5 "Z"	.54	.54	.54	.54
3300	1440	1.5 "Z"	.54	.54	.54	.54
4400	2000	1.5 "Z"	.54	.54	.54	.54

"Above Prices apply to Type 100. Type 200 Tyron Prices are 3¢ more."

Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points east of the Mississippi River.

Prices are subject to change without notice.

North American Rayon Corp.

High-Strength Yarns—SUPER-NARCO

		Twist	Cones	Beams
1650	720	3Z		$.55
1850	720	3Z	$.55	
Super High Strength Yarns—				
1650	720	1.5Z	.58	.58

Terms: Net 30 days, f.o.b. shipping point. Minimum freight allowed to consignee's nearest freight station East of the Mississippi River. To points West of the Mississippi River minimum freight to Memphis, Tenn. allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates if sold f.o.b delivery point.

ACETATE FILAMENT YARN

American Viscose Corp.

Current Prices
Effective December 21, 1956

Bright and Dull

* Intermediate Twist

Denier & Filaments	Cones & 4-6 Lb. Tubes	Twister Tubes	Warps	Spinning Cones	Twist Warps
55/14	$1.04	$1.02	$1.05	$.98	$.99
75/20	1.00	.98	1.01	.94	.95
100/28	.95	.93	.96	.89	.90
120/32	.86	.84	.87	.80	.81
150/41	.77	.76	.78	.72	.73
200/54	.73	.72	.74	.69	.70
300/80	.69	.68	.70	.65	.66

* Standard Twist 2¢ additional.
Terms: net 30 days.

Celanese Corp. of America

Current Prices
Effective December 20, 1956

Bright and Dull

Denier and Filaments	Intermediate Twist 4 & 6 Lb Cones	Beams	4 & 6-TM Tubes	4-Pound Cheeses	Spinning Twist Cones	Beams	O Twist Tubes
45/13	$1.17	$1.18	$	$	$	$1.12	$ ....
55/15	1.04	1.05	....	....	.98	.99	.925
75/20	1.00	1.01	.98	....	.94	.95	.84
75/50	1.02	1.03	1.00	....	....	.97	.89
100/26-40	.95	.96	.93	....	.89	.90	.81
120/40	.86	.87	.85	....	.80	.81	....
150/40	.77	.78	.77	.77	.72	.73	.69
200/52	.73	.74	.73	....	.69	.70	....
300/80	.69	.70	.69	....	.65	.66	.63
450/120	.67	.68	.67	....	.63	.64	....
600/160	.65	.66	.65	....	....	....	....
900/80-240	.63	.64	.63	....	....	....	.61

150 Denier 12-TM Tubes ..... .76
55/0/15 Dull Tricot Beams ..... .985
2-Pound Cheeses ..... .01 Less Than 4-Pound Cheeses
2-BU and 4-Bu Tubes ..... Same Price as 4 and 6-Lb. Cones
2-Lb. Twist Tubes ..... .01 Less Than 4 & 6-Lb. Twist Tubes on 120, 200 and 300 Denier Intermediate Twist

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.

Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.

Celaperm Filament Yarn Prices

Denier and Filaments	Intermediate Twist 4 & 6-Lb. Cones	Beams	Spinning Twist Cones	Beams
55/15	$1.37	$1.38	$1.31	$1.32
75/20	1.34	1.35	1.28	1.29
100/26	1.28	1.29	1.22	1.23
120/40	1.19	1.20	1.13	1.14
150/40	1.11	1.12	1.06	1.07
200/52	1.05	1.06	1.01	1.02
300/80	1.01	1.02	.97	.98
450/120	.99	1.00	.95	.96
600/160	.97	.98	....	....
900/80	.94		....	....

3 to 5 Turns on Cones or Beams — $.02 Additional

TDI News

(Continued from Page 65)

TDI Golf Tournament, June 11-13

The 11th annual golf tournament of the Textile Distributors Institute will be held this year, as in the past, at the Shawnee Inn, Shawnee-on-Delaware, Pa., it was announced last month by Samuel Schwartz, Cadillac Textiles, Inc., chairman of the TDI Golf Tournament Committee. The tournament will start on Wednesday morning, June 11 and will end on Friday, June 13, after lunch.

Samuel Schwartz

While golf is the center of attraction for the majority of those attending the tournament, there is also tennis, swimming and boating. The affair, as is traditional, is limited to men only. Accommodations at Shawnee are somewhat limited; so those wishing to attend are requested to make their reservations as early as possible. The reservations will definitely close on May 15 and perhaps earlier if completed. No cancellations will be accepted after June 2.

Reservations will only be accepted for the three day party. Each member will be restricted to a total of four reservations, including guests. Such guests may be either mill, yarn, factor, banker, broker or dyer representatives. The number of reservations is limited and will be accepted in the order received.

To make reservations, contact Miss Hilda A. Wiedenfeld, executive secretary, Textile Distributors Institute, 469 Seventh Ave., New York 18, N. Y. LOngacre 3-2992.

Members of the Golf Tournament Committee, in addition to Mr. Schwartz, are George Greenspan, The Cantor-Greenspan Co., Inc.; A. J. Wullschleger, Wullschleger & Co., Inc; Walter Ross, Rosewood Fabrics, Inc., president of TDI, ex officio.

Acting Talent Wanted

The Textile Distributors Institute is scouting for theatrical talent to take part in the annual TDI musical show that takes place at the Golf Tournament to be held this year at Shawnee Inn, Shawnee-on-Delaware, Pa., June 11 to 13. TDI executive secretary, Hilda A. Wiedenfeld, has appealed to members to help recruit actors for the entertainment which will shortly go into rehearsal. Any members who are talented, or who know any one who is talented, are urged to volunteer. The underlying idea of TDI's annual show, she points out, is that members and guests will participate and help entertain each other.

The past cannot be changed—
the future is still in our hands!

We like to think

LAMBERTVILLE THREAD GUIDES

will continue, in the future as they have in the past, to play an important part in production and processing of fine fibers and fabrics. We expect them to do it even better too, thanks to continuing research in ceramic compositions. Every Lambertville guide is designed to "take it" under the higher speeds and greater abrasion modern yarns impose. You can rely too on their greater overall economy. Why not ask us to supply samples for your evaluation.

LAMBERTVILLE CERAMIC
AND MANUFACTURING COMPANY
LAMBERTVILLE NEW JERSEY

The **Borregaard Co.,** Inc.
Norway House, 290 Madison Avenue
NEW YORK 17, NEW YORK
Norwegian Viscose Rayon Staple Fiber
Bright Supral **Dull**
Sole Agent For **United States, Canada, Mexico, Cuba**

Industrial Engineers
MODERNIZATION PROGRAMS
PLANT LAYOUTS
MANAGEMENT PROBLEMS
WORK LOAD STUDIES
COST REDUCTION REPORTS
COST SYSTEMS
SPECIAL REPORTS
Specializing in Textiles Since 1914
RALPH E. LOPER CO.
GREENVILLE, S. C. Dial CEdar 2-3868
FALL RIVER, MASS. Dial OSborne 6-8261

Celaperm Black Yarn Prices

Effective March 11, 1955

Denier and Filaments	4 & 6-Lb. Intermediate Twist Cones	Beams	Spinning Twist Cones	Beams
55/15	$1.17	$1.18	$1.11	$1.12
75/20	1.14	1.15	1.08	1.09
100/26	1.08	1.09	1.02	1.03
120/40	.99	1.00	.93	.94
150/40	.91	.92	.86	.87
200/52	.85	.86	.81	.82
300/80	.81	.82	.77	.78
450/120	.79	.80	.75	.76
600/160	.77	.78	....	....
900/80	.74	....	....	....

3 to 5 Turns on Cones or Beams — $.02 Additional

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Arnel Triacetate Yarn Prices

Bright & Dull

Denier and Filament	Cones	Beams	Thick & Thin Cones
55/WKZ/15	$	$1.02	$ ....
55/2Z/15	1.23	1.24	....
75/WKZ/20	....	1.11	....
75/2Z/20	1.16	1.17	....
100/2Z/26	1.10	1.11	....
120/2Z/32	1.01	1.02	....
150/2Z/40	.92	.93	....
200/2Z/52	.87	.88	1.19
300/2Z/80	.85	.86	1.17
450/2Z/120	.84	.85	....
600/2Z/160	.83	.84	1.15

3 to 5 Turns on Cones or Beams—$.02 Additional
Premium for Black Arnel—$.25 Per Pound
Premium for Navy Arnel—$.37 Per Pound

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A. East of Mississippi River. Transportation prepaid to any U.S.A. destination West of Mississippi River, but charge is made for the portion of transportation from river crossing nearest customer's location.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our Acknowledgments of Orders.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Acetate

Denier & Filament	Zero Twist Tubes	Zero Twist Beams	Low Twist Cones	Low Twist Beams	Intermediate Twist 2 & 4 Lb. ⅝" Tbs.	Intermediate Twist 4 & 6 Lb. Tw. Tbs.	Intermediate Twist Cones	Intermediate Twist Bms.
45-13	$1.03	$1.11		$1.12				
55-18	.925	.985		.99			$1.04	$1.05
55-24	.925	.985		.99			1.04	1.05
75-24	.84	.94		.95		$.98	1.00	1.01
75-50				.97		1.00	1.02	1.03
100-32	.81	.89		.90		.93	.95	.96
120-50	.77	.80		.81		.85	.86	.87
150-40	.69	.72	.72	.73	.77	.77	.77	.78
200-60	.68		.69	.70	.73	.73	.73	.74
240-80			.67				.71	
300-80	.63	.65	.65	.66	.69	.69	.69	.70
450-120	.63		.63	.64	.67	.67	.67	.68
600-160					.65		.65	.66
900-44					.63		.63	.64
900-240					.63		.63	.64
1800-88					.61		.61	.62
2700-132					.61		.61	.62
3000-210					.61			.62

(A) Regular Twist (2.9 and 5 T.P.I.)—add $.02 to Intermediate Twist Price.

(B) 1 lb. ⅝" Tubes—add $.02 to 2 & 4 lb. ⅝" Tube Price.

Color-Sealed

Denier & Filament	Zero Twist Tubes	Zero Twist Beams	Low Twist Cones	Low Twist Beams	Intermediate Twist Twisted Tubes 2 Lb.	4 & 6 Lb.	Cones	Beams
55-18	$1.245	$1.315		$1.32	$1.35	$1.35	$1.37	$1.38
75-24	1.18	1.28		1.29	1.32	1.32	1.34	1.35
100-32	1.14			1.23	1.26	1.26	1.28	1.29
150-40	1.03	1.06	1.06	1.07	1.10	1.11	1.11	1.12
200-64	1.00		1.01	1.02	1.04	1.05	1.05	1.06
300-80	.95	.97	.97	.98	1.00	1.01	1.01	1.02

(A) Regular Twist—Add $.02 to Intermediate Twist Price.

Black

Denier & Filament	Zero Twist Tubes	Zero Twist Beams	Low Twist Cones	Low Twist Beams	Intermediate Twist 2 & 4 Lb. ⅝" Tbs.	4 & 6 Lb. Tw. Tbs.	Cones	Beams
55-18	$1.045	$1.115		$1.12		$1.15	$1.17	$1.18
75-24	.98	1.08		1.09		1.12	1.14	1.15
100-32	.94			1.03		1.06	1.08	1.09
150-40	.83	.86	.86	.87		.91	.91	.92
200-60	.80		.81	.82		.85	.85	.86
300-80	.75	.77	.77	.78	.81	.81	.81	.82
450-120			.75	.76	.79	.79	.79	.80
600-160			.73	.74	.77	.77	.77	.78
900-240			.73	.74	.74	.74	.74	.75

(A) Regular Twist (2.9 and 5 T.P.I.)—add $.02 to Int. Twist Price.

(B) 1 lb. ⅝" Tubes—add $.02 to 2 & 4 lb. ⅝" Tube Price.

Specialty Yarns

Type 20	Same Price as Regular Yarn
Type C	Same Price as Regular Yarn

Thick & Thin

Denier & Filament	Natural Cones	Natural Beams	Black Cones	Black Beams	Color-Sealed Cones	Color-Sealed Beams
200-64 Int. Twist	1.05		$1.15		$1.35	
200-64 Reg. Twist	1.08	$1.09	1.17	$1.21		

Terms: Net 30 days. Subject to change without notice.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Eastman Chemical Products, Inc.

Tennessee Eastman Co.

Effective December 21, 1956

"Estron"* Yarn, Bright or Dull — White

Denier & Filament	Regular Twist Cones	Intermediate Twist Cones	Intermediate Twist Tubes	Intermediate Twist Beams	Low Twist Cones	Low Twist Beams	Zero Twist Tubes	Tricot Beams Spun Twist	Tricot Beams Zero Twist
55/13	$1.06	$1.04	$1.02	$1.05	$.98	$.99	$.92½	$.99	$.98½
75/19	1.02	1.00	.98	1.01	.94	.95	.84	.95	....
75/49	1.04	1.02	....	1.03	....	....	....	....	....
100/25	.97	.95	.93	.96	.89	.90	.81	....	....
120/30	.88	.86	.84	.87	.80	.81	....	....	....
150/38	.79	.77	....	.78	.72	.73	.69	....	....
200/50	.75	.73	....	.74	.69	.70	....	....	....
300/75	.71	.69	....	.70	.65	.66	.63	....	....
450/114	.69	.67	....	.68	.63	.64	....	....	....
600/156	.67	.65	....	.66	.62	.63	.63	....	....
900/230	.65	.63	....	.64	....	....	.61	....	....
Heavier	....	....	....	....	....	....	.56	....	....

Current Prices—December 19, 1955

"Chromspun"*—Standard Colors (Except Black)

Denier & Filament	Regular Twist Cones	Regular Twist Beams	Intermediate Twist Cones	Intermediate Twist Beams	Low Twist Cones	Low Twist Beams
55/13	$1.39	$1.40	$1.37	$1.38	$1.31	$1.32
75/19	1.36	1.37	1.34	1.35	1.28	1.29
100/25	1.30	1.31	1.28	1.29	1.22	1.23
150/38	....	....	1.11	1.12	1.06	1.07
300/75	....	....	1.01	1.02	.97	.98
450/114	....	....	.99	1.00	.95	.96
900/230	....	....	.94	.95	....	....

Current Prices

"Chromspun"*—Black

Denier & Filament	Regular Twist Cones	Intermediate Twist Cones	Intermediate Twist Beams	Low Twist & Spun Twist Beams
55/13	$1.19	$1.17	$1.18	$1.12
75/19	1.16	1.14	1.15	1.09
100/25	1.10	1.08	1.09	1.03
150/38	.93	.91	.92	.87
200/50	.87	.85	.86	.82
300/75	.83	.81	.82	.78
450/114	.81	.79	.80	.76
900/230	.76	.74	.75	....

Prices are subject to change without notice.

Prices on special items quoted on request.

Terms: Net 30 days. Payment—U. S. A. dollars.

Transportation charges prepaid or allowed to destination in the United States east of Mississippi River. Seller reserves right to select route and method of shipment. If Buyer requests and Seller agrees to a route or method involving higher than lowest rate Buyer shall pay the excess of transportation cost and tax

* "Estron" and "Chromspun" are trade-marks of the Eastman Kodak Co.

RAYON STAPLE and TOW

American Viscose Corp.

Current Prices

Rayon Staple

	Bright and Dull
Regular	$ .31
Extra Strength	
1.0 Denier	.34
"Viscose 32A"	.36
"Avisco Crimped"	
1.25 Denier	.34
3.0 & 5.5 Deniers	.32
8.0 & 15.0 Deniers	.34
"Avisco Super L"	
8.0, 15.0 & 22.0 Deniers	.35
Short Staple Blend	.33

Rayon Tow

Grouped Continuous Filaments (200,000 Total Denier)	
1.5, 3.0 & 5.5 Denier Per Filament	.33
9.0 Denier Per Filament	.35
Grouped Continuous Filaments (4400/300 & 2000/1500)	.65

Prices of other descriptions on request.

Terms: Net 30 days.

Celanese Corp. of America

Current Prices

Rayon Tow

	Bright & Dull
1.5, 3, 5 D.P.F.	.33
8 D.P.F.	.35

Terms: Net 30 days. Shipments prepaid to any destination in U. S. A. east of the Mississippi River. Shipments west of the Mississippi will be made on a collect freight basis and allowance will be made for the lowest transportation cost to the point of river crossing.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

A. K. Landau Dies

Alfred K. Landau, 73, director of sales research for Saco-Lowell Shops died on Feb. 28 after a long illness. Born in New Orleans, Mr. Landau was a graduate of Tulane University. His first job in textiles was with Lane Cotton Mills in New Orleans, and in 1910, he began a long association with Saco-Lowell. As director of sales research for the company he was responsible for editing the "Saco-Lowell Bulletin" and for the many technical manuals prepared to aid in the operation of Saco-Lowell equipment.

Over the years, Mr. Landau, on behalf of Saco-Lowell, traveled extensively throughout the world, including many trips to South America, Europe and the Far East. His devotion to the well-being of the industry, backed by an intimate knowledge of mill operation enabled him to provide valued assistance to mills throughout the world. He is survived by his wife, Hattie B. Landau, two daughters, Mrs. Bertha L. Teel, and Mrs. Adele L. Starr; and a son, Alfred L. Landau.

A. K. Landau

News (Continued fr. Page 83)

George M. Thurmond has become vice president of Pacific Mills, a member company of Burlington Industries, Inc.

MacVicker Snow has been appointed assistant secretary of Celanese Corp. of America, succeeding **James R. Kennedy** who has recently become vice president in charge of industrial relations. Further appointments in the company include the naming of **Nobles L. Killibrew** to the post of resident sales representative for the company's textile sales office in Atlanta, Ga; **Hershel S. Jenkins,** senior process development engineer, Charlotte Development Laboratories; **Elizabeth Stout,** fabric coordinator, textile division.

John Wright, Jr. has joined the sales staff of Arnold, Hoffman & Co., serving N. Y. C., Conn., and Western Mass.

Richard C. Scott has joined Roberts Co. as advertising manager.

William V. Goodhue has been elected vice president in charge of research and development at Universal Winding Co.

(Continued on Page 91)

NON-FLUID OIL

TRADE MARK REGISTERED

AVOIDS OIL STAINED GOODS

NON-FLUID OIL can prevent heavy losses from oil-spoiled goods because it is made to stay in loom bearings and do its job – instead of throwing or spattering.

By staying in the bearings and off goods on all models and makes of looms, NON-FLUID OIL keeps them in steady operation, giving highest output of perfect cloth.

In addition to minimizing damage to goods caused by leaking and spattering, NON-FLUID OIL further keeps costs down by outlasting ordinary oils 3 to 5 times. Thus, it pays for itself many times over.

Proof is in performance. Send for Bulletin T-20 and a free testing sample of NON-FLUID OIL.

NEW YORK & NEW JERSEY LUBRICANT COMPANY

292 MADISON AVE., NEW YORK 17, N. Y.

WORKS: NEWARK, N. J.

So. Dist. Mgr.: Lewis W. Thomason, Jr. Charlotte, N. C.

WAREHOUSES

Birmingham, Ala.
Atlanta, Ga.
Columbus, Ga.
Charlotte, N. C.
Greenville, S. C.
Chicago, Ill.
Springfield, Mass.
Greensboro, N. C.
Detroit, Mich.
Providence, R. I.
St. Louis, Mo.

NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture. So-called grease imitations of NON-FLUID OIL often prove dangerous and costly to use.

Courtaulds (Alabama) Inc.

Effective March 7, 1958

Rayon Staple

	Bright	Dull
1½ and 3 denier	$.31	$.31
Available in 1⅛", 1-9/16" and 2".		

Crimped Rayon Staple

3 and 5½ denier	$.32	$.32
Available in 1-9/16" and 3".		
3 denier		.32
Available in 2".		

"Coloray" Spun Dyed Rayon Staple

	1½ Den. 1-9/16"	3 Den. 2"	Price per Lb.
	(Code numbers for color and denier)		
Black	1404	1419	37¢
Tan	8004	8019	39¢
Medium Brown	8804	8819	39¢
Silver Grey	1004	1019	39¢
Mocha	7704	7719	39¢
Dark Brown	8604	8619	40¢
Aqua	4704	4719	40¢
Rose	5804	5819	40¢
Dawn Pink	5904	5919	40¢
Ecru	7904	7919	40¢
Slate Grey	0804	0819	43¢
Light Blue	4004	4019	44¢
Sulphur	2004	2019	44¢
Nugget	2304	2319	44¢
Apple Green	5104	5119	45¢
Sage	5304	5319	45¢
Crystal Blue	3904	3919	45¢
Peacock Blue	4604	4619	46¢
Medium Blue	4204	4219	48¢
Dark Blue	4404	4419	49¢
Hunter Green	5404	5419	49¢
Indian Yellow	2504	2519	49¢
Pink	6004	6019	50¢
Turquoise	4804	4819	50¢
Malachite Green	5204	5219	51¢
Red	7004	7019	56¢

(In addition to the above, Black is also available in:
1½ den. 1⅛" (1401) 3 den. 1-9/16" (1416)
3 den. 1⅛" (1413) 5½ den. 3" (1429)

Terms: Net 30 days f.o.b. LeMoyne, Alabama; Minimum transportation allowed to points in U.S.A. east of Mississippi River.

The Hartford Rayon Co.

Div. Bigelow-Sanford Carpet Co., Inc.

Rayon Staple

Effective January 1, 1958

REGULAR

1.5 denier Bright	
1⅛"	.31
5½ denier Bright	
1½", 3" and 4½"	.32

VISCALON 66 (Crimped)

8 denier 3" Bright	.34
15 denier 3" Bright	.34
15 denier 3" Dull	.34

"KOLORBON"—Solution Dyed Rayon Staple—3" and 6"

	8 Denier Bright	15 Denier Dull	15 Denier Bright
Cloud Grey	45¢	45¢	....
Sandalwood	45¢	45¢	....
Nutria	45¢	45¢	....
Sea Green	45¢	45¢	....
Mint Green	45¢	45¢	....
Champagne	45¢	45¢	....
Cafe Brown	55¢	....	55¢
Midnight Black	45¢	....	45¢
Gold	48¢	48¢	....
Turquoise	45¢	45¢	....
Melon	48¢	48¢	....
Capri Blue	45¢	45¢	....
Charcoal Grey	45¢	45¢	....
Coco	46¢	46¢	....
Sable	47¢	....	47¢
Tangerine	58¢	....	58¢
Chinese Red	59¢	....	59¢
Larkspur Blue	45¢	45¢	....
Royal Blue	55¢	....	55¢
Lemon Peel	46¢	46¢	46¢
Kelly Green	46¢	46¢	46¢
Bitter Green	55¢	....	55¢

Terms: Net 30 days. Prices are quoted f.o.b. shipping point, lowest cost of transportation allowed, or prepaid. To points West of the Mississippi, lowest cost of transportation allowed to the Mississippi River crossing.

North American Rayon Corporation

Current Prices

Rayon Staple

High Tenacity	Bright
No. 1 (Unshrunk)	
1, 1.5 & 3 deniers	.40
No. 2 (Preshrunk)	
1, 1.5 & 3 deniers	.40

ACETATE STAPLE and TOW

Celanese Corp. of America

Current Prices

Staple

Celanese Acetate Staple	Bright & Dull
3, 5.5 & 8 Denier (Regular Crimp or High Crimp)	$.36
2, 12 & 17 Denier (Regular Crimp or High Crimp)	.36
35 Denier	.38
50 Denier	.40
Type F — 5.5, 8, 12, 17 Denier	.35
Type K — (Available under Celanese License Agreement)	.39
⅝" to ⅞" length (All Deniers)	.03 (premium)
35 Denier Flat Filament Acetate	.40
Non-Textile Acetate Fibers	.28

Tow (Celatow)

3, 5.5 & 8 Denier	$.37
2, 12 & 17 Denier	.37
35 Denier	.40
50 Denier	.42

Terms: Net 30 days. Shipments prepaid to any destination in U.S.A. east of the Mississippi River. Shipments west of the Mississippi will be made on a collect freight basis and allowance will be made for the lowest transportation cost to the point of river crossing.

Prices subject to change without notice.

All previous prices withdrawn.

• No transportation allowed (F.O.B. shipping point).

Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

Arnel Triacetate Staple and Tow

Arnel Triacetate Staple	Bright & Dull
2.5 Individual Denier	$.55
5.0 Individual Denier	.55
Arnel Triacetate Tow	
2.5 Individual Denier 114,000 Total Denier	$.60
5.0 Individual Denier 90,000 Total Denier or 180,000 Total Denier	.60

Packaged on Ball Warps

Terms: Transportation prepaid or allowed to any destination in U.S.A. east of Mississippi River. Transportation prepaid to any U.S.A. destination west of Mississippi River, but charge is made for the portion of transportation from river crossing nearest customer's location.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

NON CELLULOSIC YARN

NYLON

Allied Chemical and Dye Corporation

Caprolan®†

Effective December 3, 1957

Denier	Filament	Turn/In.	Twist	Type**	Package	1st Grade Price/Lb.
560	32	1	Z	HB	Aluminum Tube	$1.39
840	136	½	Z	HBT	Aluminum Tube	1.30
840	136	½	Z	HBT	Beams	1.30
Heavy Yarn						
2100	408	0	O	HB	Paper Tube*	$1.27
2100	112	0	O	HB	Paper Tube*	1.30
2500	408	0	O	HB	Paper Tube*	1.27
3360	544	0	O	HB	Paper Tube*	1.26
4200	680	0	O	HB	Paper Tube*	1.26
4200	224	0	O	HB	Paper Tube*	1.29
5000	816	0	O	HB	Paper Tube*	1.25
5000	280	0	O	HB	Paper Tube*	1.28
5800	952	0	O	HB	Paper Tube*	1.25
7500	1224	0	O	HB	Paper Tube*	1.24
10000	1632	0	O	HB	Paper Tube*	1.24
15000	2448	0	O	HB	Paper Tube*	1.23

Terms—Net 30 days.

Prices subject to change without notice.

All prices quoted F.O.B. Shipping Point.

Following are invoiced as a separate item.

Bobbins—45 cents each.

Aluminum Tubes—40 cents each.

Beams—$220.00 each.

Cradles for Beams—$53.00.

B—Bright.
H—High Tenacity.
T—Heat Stabilized.

* Paper Tubes non-returnable, no charge.

** Type is used to describe luster and tenacity

Lowest freight cost prepaid or allowed east of Mississippi River, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

† Allied Chemical's polyamide fiber.

American Enka Corporation

Enka Nylon Yarn Prices

Effective March 13, 1958

Denier & Filament	Twist	Luster	Tenacity	Package	Yarn Wt. Per Pkg.	Price/Pound Std.	Price/Pound Sub.
15 monofilament	0.5Z	Semi-dull	Normal	Pirn	1 lb.	$5.25	$5.00
15 monofilament	0.5Z	Dull	Normal	Pirn	1 lb.	5.30	5.05
15/2	0.5Z	Semi-dull	Normal	Pirn	1 lb.	7.37	6.70
18/2	0.5Z	Semi-dull	Normal	Pirn	1 lb.	6.65	6.10
20 monofilament	0.5Z	Semi-dull	Normal	Pirn	1 lb.	4.95	4.50
20/2	0.5Z	Semi-dull	Normal	Pirn	1 lb.	5.55	5.05
30/4	0.5Z	Semi-dull	Normal	Pirn	1 lb.	2.62	2.42
30/6	0.5Z	Semi-dull	Normal	Pirn	2 lb.	2.36	2.21
40/8	0.5Z	Semi-dull	Normal	Pirn	2 lb.	2.01	1.81
50/13	0.5Z	Semi-dull	Normal	Pirn	2 lb.	1.91	1.76
200/16	0.9Z	Bright	Normal	Cone	4 lb.	1.49	1.44
200/16	0.5Z	Bright	Normal	Beam	....	1.54	....
200/34	0.9Z	Bright	Normal	Cone	4 lb.	1.49	1.44
200/34	0.5Z	Bright	Normal	Beam	....	1.54	....

Pirns charged at $.25 or $.45 each, depending upon type. Deposit refunded upon return of pirn in good condition. Cones are non-returnable. Beams and cradles are deposit carriers and remain property of American Enka Corporation.

Terms: Net 30 days. Minimum common carrier transportation charges will be pre-paid and absorbed to the first destination on or east of the Mississippi River. In pre-paying transportation charges, seller reserves the right to select the carrier used.

More Kenaf from Cuba

The growing and processing of kenaf may become a new and important industry in Cuba, as the result of a 179-page report prepared by Stanford Research Institute for Compania Cubana de Electricidad, an affiliate of the American & Foreign Power System which provides 90% of the electrical power distribution on the island.

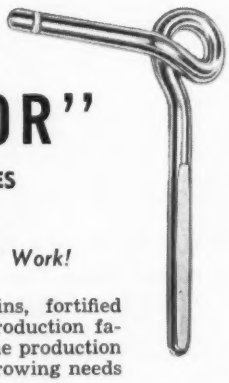
Kenaf is a substitute for jute, which today ranks second only to cotton as the world's most valuable commercial fiber. The Stanford study reports that major problems in growing kenaf in Cuba have been solved, and possible high yields of new disease-resistant strains would open new avenues to Cuban capital and industry.

Stanford states the physical properties of Cuban kenaf make it suitable for nearly all applications where jute is now used. It can be spun and woven on jute machinery, notably into heavy sacking for sugar bags. Cuba alone consumes 45,000,000 new bags annually .

If kenaf were used, the study states that gross revenue to the industry would run to around $15,000,000 a year and would effect substantial savings in foreign exchange and improve the island's trade balance. The United States and Europe would be potential markets for Cuban kenaf.

The U. S. imports about 750,000,000 pounds of jute fiber and jute products annually, and European imports of jute fiber run to about 1,300,000,000 each year, the substantial part of which is resold in the Western Hemisphere as burlap, sacking and twine. *For free summaries of Stanford Research report write the editors.*

Specify

COLLINS "IRRIDIOR"

THREAD GUIDES

the finest in Hard Chromium Plated Work!

For over 35 years—Collins, fortified with the technique and production facilities, has pioneered in the production of wire work to suit the growing needs of the textile industry.

And today, Collins "Irridior" Thread Guides are "tops" in the processing of Nylon and Rayon threads—because "Irridior" means harder, denser chrome-plating designed to last longer.

"For those who prefer Matte or Sandblast finish, try our Irridior Matte Finish F75."

COLLINS SUPPLY & EQUIPMENT CO.

1357-97 Monsey Ave. Scranton 2, Pa.

The Laurel Leaf

BUSINESS MAGAZINE EDITION

It Beats All! . . .

LAURAMINE 314-A

For really superior aftertreating of cotton (especially knitting) yarns, LAURAMINE 314-A is a top-quality anionic finishing agent. Quality member of the LAUREL line, it is wonderfully resistant to the adverse effect of ageing and . . . *will not* turn rancid. Cannot alter even the most delicate shades of dyed goods, and whites *stay* white.

A white, medium viscosity paste, LAURAMINE 314-A is recommended for use as a self-finish. But, while best results are obtained with it alone, it is also compatible with other finishing materials—except for cationics, of course—and may be safely used in combination.

The stability of LAURAMINE 314-A is high in neutral and mildly alkaline solutions, though acid combinations should be avoided. It is an excellent choice in finishing dye lots where high concentrations of salt fixatives are required, for it shows stability in up to 1% sodium chloride solutions.

Easy to prepare, simple to use, LAURAMINE 314-A *beats all* for results! Let this fine LAUREL product increase the quality of *your* yarn. A generous sample of LAURAMINE 314-A awaits your request. Write today!

Laurel Brand

Laurel SOAP MANUFACTURING CO., INC.
TIOGA, THOMPSON & ALMOND STS., PHILA. 34, PA.

Warehouses: Paterson, N. J., Chattanooga, Tenn., Charlotte, N. C.

The Chemstrand Corp.

Current Prices

Effective December 19, 1956

Denier	Filament	Twist	Type*	Package	Standard	Second
10	1	O	SD	Bobbins	$8.42	$7.81
15	1	O	SD	Bobbins	5.25	5.00
15	1	O	D	Bobbins	5.30	5.00
15	1	O	D	Spools	5.41	....
30	10	Z	SD	Bobbins	2.36	2.21
30	10	Z	HSD	Bobbins	2.36	2.21
30	26	Z	SD	Bobbins	2.49	2.21
40	7	Z	SD	Bobbins	2.11	1.81
40	13	Z	SD	Bobbins	2.01	1.91
40	13	Z	SD	Spools	2.11	....
40	13	Z	D	Bobbins	2.06	1.96
40	13	Z	D	Spools	2.16	....
50	17	Z	SD	Bobbins	1.91	1.76
70	34	Z	SD	Bobbins	1.71	1.66
70	34	Z	B	Bobbins	1.71	1.66
70	34	Z	HB		1.71	1.66
70	34	Z	D	Spools	1.86	....
80	26	Z	SD	Bobbins	1.71	1.56
100	34	Z	SD	Bobbins	1.65	1.60
100	34	Z	HB	Bobbins	1.70	1.60
140	68	Z	SD	Bobbins	1.60	1.55
200	34	Z	B	Bobbins	1.49	1.44
200	68	Z	SD	Bobbins	1.56	1.46
210	34	Z	HB	Bobbins	1.49	1.44
210	34	Z	HB	Spools	1.54	....
210	34	Z	HB	Beams	1.54	....
260	17	Z	HB	Bobbins	1.49	1.39
260	17	Z	HB	Spools	1.54	....
420	68	Z	HB	Bobbins	1.39	1.29
630	102	Z	HB	Bobbins	1.39	1.29
840	136	Z	HB	Tubes	1.34	1.24
840	140	Z	HB	Beams	1.30	1.20
840	140	Z	HB	Tubes	1.30	1.20

*Types: D—Dull; SD Semi-dull; B—Bright; H—High tenacity.

Bobbins are invoiced at 25¢ or 45¢ each, depending on type; tubes are invoiced at 40¢ each; spools invoiced at $77.00 and $95.00 depending on type; and beams and crates for beams are invoiced at $220 and $25 respectively.

Prices subject to change without notice.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Nylon Yarn

Denier & Filament	Turns/Inch & Twist	Type	Package	1st Grade	2nd Grade
7-1	0	200	Bobbin	$9.47	$8.82
10-1	0	200	Bobbin	8.42	7.82
12-1	0	200	Bobbin	7.35	6.85
15-1	0	200	Beam	5.36	....
15-1	0	200	Bobbin	5.25	5.00
15-1	0	680	Beam	5.41	....
15-1	0	680	Bobbin	5.30	5.00
20-1	0	200	Bobbin	4.95	4.50
14-2	0.2Z	200	Bobbin	7.90	7.30
17-2	0.2Z	200	Bobbin	7.05	6.50
20-2	0.2Z	200	Bobbin	5.55	5.05
15-3	0.2Z	200	Bobbin	6.10	5.60
21-3	0.2Z	200	Bobbin	5.48	5.05
20-7	0.5Z	200	Bobbin	2.91	2.61
20-7	0.5Z	200	Beam	3.02	....
20-7	0.5Z	680	Bobbin	2.96	2.61
20-7	0.5Z	680	Beam	3.07	....
20-20	0.7Z	209	Bobbin	6.00	....
28-4	0.2Z	200	Bobbin	2.81	2.61
30-10	0.5Z	200	Bobbin	2.36	2.21
30-10	0.5Z	200	Tricot Bms.	2.46	....
30-10	0.5Z	680	Bobbin	2.41	2.21
30-10	0.5Z	680	Tricot Bms.	2.51	....
30-26	0.5Z	200	Bobbin	2.49	2.21
40-7	0.5Z	200	Bobbin	2.11	1.81
40-13	0.5Z	200	Bobbin	2.01	1.91
40-13	0.5Z	200	Tricot Bms.	2.11	....
40-13	0.5Z	400	Bobbin	2.13	1.90
40-13	0.5Z	680	Bobbin	2.06	1.96
40-13	0.5Z	680	Tricot Bms.	2.16	....
40-34	0.5Z	200	Bobbin	2.21	1.81
50-10	0.5Z	200	Bobbins	2.11	1.76
50-17	0.5Z	200	Bobbin	1.91	1.76
50-17	0	200	Tubes	1.91	1.76
50-17	0.5Z	680	Bobbin	2.01	1.76
70-17	0.5Z	200	Bobbin	1.71	1.66
70-34	0	100	Tubes	1.71	1.66
70-34	0.5Z	100/200	Bobbin	1.71	1.66
70-34	0	200	Tubes	1.71	1.66
70-34	0.5Z	300	Bobbin	1.76	1.66
70-34	0.5Z	680	Bobbin	1.76	1.66
70-34	0	680	Tubes	1.76	1.66
80-26	0.5Z	200	Bobbin	1.71	1.56
90-44	0.5Z	200	Bobbin	1.86	1.76
100-34	0.5Z	200	Bobbin	1.65	1.60
100-34	0.5Z	300	Bobbin	1.70	1.60
100-34	0	300	Tubes	1.70	1.60
100-34	0.5Z	680	Bobbin	1.70	1.60
100-50	0.5Z	200	Bobbin	1.71	1.60
140-68	0.5Z	100	Bobbins	1.60	1.55
140-68	0	200	Tubes	1.60	1.55
140-68	0.5Z	200	Bobbin	1.60	1.55
140-68	0.5Z	300	Bobbin	1.65	1.55
200-34	0	100	Tubes	1.49	1.44
200-34	0.7Z	100	Bobbin	1.49	1.44
200-34	0.7Z	680	Bobbin	1.54	1.44
200-68	0.7Z	200	Bobbin	1.56	1.46
210-34	0	300	Tubes	1.49	1.44
210-34	0.7Z	300	Bobbin	1.49	1.44
210-34	0.7Z	300	Beam	1.54	....
210-34	0.7Z	330	Bobbin	1.59	1.44
260-17	1Z	300	Bobbin	1.49	1.39
400-68	0.7Z	100	Bobbin	1.39	1.29
420-68	1Z	300	Bobbin	1.39	1.29
780-51	1Z	300	Bobbin	1.39	1.29
800-140	0.5Z	100	Bobbin	1.39	1.29
840-140	0.5Z	300/700	Al. Tbs	1.30	1.20
840-140	0.5Z	300/700	Beam	1.30	....

Color-Sealed Yarn

Denier & Filament	Turns/Inch & Twist	Type	Package	1st Grade	2nd Grade
30-10	0.5Z	140	Bobbin	$2.71	$2.56
40-13	0.5Z	140	Bobbin	2.36	2.16
70-34	0.5Z	140	Bobbin	2.06	2.01
100-34	0.5Z	140	Bobbin	2.00	1.95
100-34	0	140	Tubes	2.00	1.95
200-34	0.7Z	140	Bobbin	1.84	1.79
260-17	1Z	140	Bobbin	1.84	1.79

Industrial Yarn				Price/Lb.
2520-420	0	300/700	Paper Tube	$1.27
4200-700	0	300/700	Paper Tube	1.25
5040-840	0	300/700	Paper Tube	1.25
7560-1260	0	300/700	Paper Tube	1.24
10080-1680	0	300/700	Paper Tube	1.24
15120-2520	0	300/700	Paper Tube	1.23

These prices are subject to change without notice. Terms: Net 30 Days.

Types

Type 100—Bright, normal tenacity.
Type 140—Bright, color-sealed, black, normal tenacity.
Type 200—Semidull, normal tenacity.
Type 209—Semidull, normal tenacity.
Type 300—Bright, high tenacity.
Type 330—Bright, high tenacity, more heat & light resistant.
Type 400—Semidull, high tenacity.
Type 680—Dull, normal tenacity.
Type 700—Bright, high tenacity.

Freight Terms—Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Following are invoiced as a separate item.
Bobbins—25 cents or 45 cents depending on type
Aluminum Tube—40¢ each
Draw Winder Tubes—$.70 or $1.00 depending on type
Tire Cord Beams—$220.00 each
Cradles for Tire Cord Beams—$115.00 each
Tricot Beams—$95.00 each
Cradles for Tricot Beams—$130.00 each
(Beams and Cradles are deposit carriers and remain the property of E. I. du Pont de Nemours & Co., Inc.)

POLYESTER E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Dacron"*

Denier & Filament	Turns/Inch	Luster	Type*	Tubes 1st Gr.
30-14	0	Bright	55	$2.81
40-27	0	Semidull	56	2.41
40-27	0	Bright	55	2.41
40-27	0	Dull	57	2.46
70-34	0	Semidull	56	2.01
70-14	0	Bright	55	2.01
70-34	0	Bright	55	2.01
70-34	0	Dull	57	2.06
100-34	0	Semidull	56	1.94
140-28	0	Bright	55	1.89
150-34	0	Semidull	56	1.91
220-50	0	Bright	51	1.84
250-50	0	Bright	55	1.86
1100-250	0	Semidull	59	1.50
1100-250	0	Bright	51	1.50

Terms: Net 30 Days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Yarn Types

* Type:
Type 51—Bright, high tenacity.
Type 55—Bright, normal tenacity.
Type 56—Semidull, normal tenacity.
Type 57—Dull, normal tenacity.
Type 59—Semidull, high tenacity.

Tubes are invoiced as a separate item at $.70 each.

* "DACRON" is DuPont's registered trade-mark for its polyester fiber.

SARAN FIBERS

The Saran Yarns Company — Odenton, Maryland

The Hall Company (Selling Agent)

41 East 42 Street, New York 17, N. Y. (Oxford 7-8996)

Current Prices:

CONTINUOUS FILAMENT

Type	Twist p. i.	Natural	Colors
1240/10	3	$1.32	$1.37
750/20**	3	1.75	1.80

** For filter fabrics and other industrial purposes only.

F.O.B. Odenton, Maryland.

Terms: Net 30 days.

NON CELLULOSIC STAPLE & TOW ACRYLIC

The Chemstrand Corp.

Current Prices

"Acrilan"

Effective October 1, 1957

	Regular Acrilan	Acrilan 16
2.0 denier Semi-Dul and Bright staple & tow	$1.24	$1.24
2.5 denier Hi-Bulk Bright and Semi-dull staple and tow	1.16	1.16

JACOBS

ONLY THE "Verybest" IS GOOD ENOUGH

Jake Jacobs says—
"Whatever your loom problem, let a JACOBS Service Engineer give you the 'Verybest' solution now."

THE BULLARD CLARK COMPANY

JACOBS

SOUTHERN DIVISION
Charlotte, N. C.

NORTHERN DIVISION
Danielson, Conn.

News (Continued from Page 87)

Kenneth H. Klipstein and **George R. Martin** have been elected executive vice presidents of American Cyanamid Co. In the company's Pigments Division **Robert A. Olson** has joined the sales staff.

Robert W. Jones has been appointed N. Y. C. sales manager for Dan River Mills' Dress Goods Division.

Jane O'Leary Harvey has been appointed fashion coordinator for Dow Chemical Co.'s textile fiber, Zefran.

Dr. Willard F. Spengeman has become director of the new technical service laboratory of Du Pont's Pigments Department, and **Ely Gonick** will serve as assistant director.

Joseph W. Tucker has been appointed assistant manager of Acrilan acrylic fiber sales for Chemstrand Corp.

Martha E. Jungerman has been appointed director of education at the Wool Bureau.

John Francis Hagen has retired from his position with Callaway Mills, Inc. where he had been assistant to the president since 1946.

Whitworth F. Bird has retired from active service with Collins and Aikman. He will continue, however, as a member of the board of directors.

Deaths

A. Vinton Clarke, president and chairman of the board of Orinoka Mills has died recently.

James Barr, retired sales manager of David Gessner Co. has died of a heart attack in Miami, Fla.

NYLON
DACRON
RAYON
WORSTED

COMPLETE PACKAGE SERVICE on dyed and thrown filament yarns, delivered on tubes, cones or in the cake.

Spun and Worsted Yarns

Dyers & throwsters of modern yarns since 1922

HOFFNER
RAYON CO.

GENERAL OFFICES

General Offices at Belgrade & Ontario Streets, Philadelphia 34, Pennsylvania. Plants at Philadelphia and Quakertown, Pennsylvania.

SALES REPRESENTATIVES

The Tillinghast-Stiles Co.
Providence, R. I. Chicago, Ill.
Shannonhouse & Wetzell, Johnston Building, Charlotte 2, N. C.

3.0 denier Bright & Semi-dull staple & tow	1.16	1.16
5.0 denier Bright & Semi-dull staple & tow	1.16	1.16
8.0 denier Bright & Semi-dull staple	1.16	1.16
15.0 denier Bright & Semi-dull staple	1.01	1.05

Terms: Net 30 days. Freight prepaid to points east of the Mississippi River.

Union Carbide Chemicals Co.

Div. Union Carbide Corp.
Textile Fibers Dept.
Effective October 1, 1957

Dynel Staple & Tow

Natural Dynel
3, 6, and 12 Denier, Staple and Tow ..... $1.10 per lb.
24 Denier, Staple and Tow ..... 1.05 per lb.
Dynel Spun with Light Colors:
Whitened, Blond, or Gray
3 and 6 Denier, Stable and Tow ..... 1.30 per lb
Dynel Spun with Dark Colors:
Black, Charcoal, and Brown
3 and 6 Denier, Staple and Tow ..... 1.40 per lb
Dynel Type 63 Bulking Fiber (3 Denier only) ..... Add $.05 per lb. to above prices

Prices are quoted f.o.b. South Charleston, W. Va.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices

"Orlon"** Acrylic Staple & Tow

Type 42	1st Grade
1.0 Denier Semidull & Bright—Staple only	$1.48
2.0 Denier Semidull & Bright	1.33
3.0 Denier Semidull & Bright	1.28
3.0 Denier Semidull Color-sealed Black	1.63
6.0 Denier Semidull & Bright	1.20
6.0 Denier Color-sealed Black	1.55
4.5 Denier Semidull	1.20
10.0 Denier Semidull	1.20

Tow—Total Denier 470,000
Staple Lengths—1½", 2", 2½", 3", 4½"
High Shrinkage Staple same price as Regular Staple

Type 39 $1.06
This product is designed for *woolen system spinning* and is a blend of deniers (average 4.2) with a variable cut length.

Type 39A $1.14
This product is designed for *woolen system spinning* and is a blend of predominately fine deniers (average 2.4) with a variable cut length.

Type 39B $1.01
This product is designed for *woolen system spinning* and is a blend of predominately heavy deniers (average 6.5) with a variable cut length.

F.O.B. Shipping Point—Freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Terms: Net 30 Days.

** "ORLON" is DuPont's registered trade-mark for its acrylic fiber.

Eastman Chemical Products, Inc.
Tennessee Eastman Co.

Effective November 15, 1956

"Verel"*

Deniers	Dull and Bright
2, 3, 5 and 8	$1.10 per pound

Prices are subject to change without notice.
Terms: Net 30 days. Payment—U. S. A. dollars.
Transportation charges prepaid or allowed to destination in the United States east of the Mississippi River. Seller reserves the right to select route and method of shipment. If buyer requests and seller agrees to a route or method involving higher than lowest rate buyer shall pay the excess of transportation cost and tax.

* "Verel" is a trade-mark of the Eastman Kodak Co.

NYLON

American Enka Corp.

Enka Nylon (Nylon Six Staple)

Denier	Luster	Length (Inches)	Price per pound
3	semi-dull	1⅛, 1½, 2, 2⅝, 3, 4½	$1.28
6	bright	3, 4½	1.28
8	bright	2⅝	1.20
10	bright	3	1.20
15	bright	3	1.20
15	semi-dull	3	1.20

Deniers and lengths of staple not listed above are available upon special request.
Terms: Net 30 days. Minimum common carrier transportation charges will be prepaid and absorbed to the first destination on or east of the Mississippi River. In prepaying transportation charges, seller reserves the right to select the carrier used.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices

Nylon Staple and Tow

Denier	Type	Staple Lengths	Tow Bundle	1st. Grade Price/Lb.	2nd Grade Staple Only
1.5	200	1⅛"—4½"	None made	$1.33	$1.18
1.5	201	1⅛"—4½"	None made	1.35	1.20
3.0	100/200	1⅛"—4½"	430M	1.28	1.13
3.0	101/201	1⅛"—4½"	455M	1.30	1.15
6.0	100	1⅛"—4½"	330M	1.28	1.13
6.0	101	1⅛"—4½"	345M	1.30	1.15
15.0	100	1½"—6½"	425M	1.20	1.05
15.0	101	1½"—6½"	None made	1.22	1.07
15.0	600	1½"—6½"	425M	1.22	1.07
15.0	601	1½"—6½"	None made	1.24	1.09

Staple lengths are restricted to the range shown opposite each denier above. The actual cut lengths within these ranges are as follows:

1⅛, 1½, 2, 2½, 3, 4½ and 6½

Types

Type 100 Bright, normal tenacity, not heatset.
Type 101 Bright, normal tenacity, heatset.
Type 200 Semidull, normal tenacity, not heatset.
Type 201 Semidull, normal tenacity, heatset
Type 600 Dull normal tenacity, not heatset.
Type 601 Dull normal tenacity, heatset.
These prices are subject to changes without notice.
Terms—Net 30 Days.
Freight Terms—Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Industrial Rayon Corp.

Effective November 29, 1956

Nylon Staple

1.5 denier ..... $1.33 per lb.
2, 3 and 6 denier ..... 1.28 per lb.
8 and 15 denier ..... 1.20 per lb.
Bright and semi-dull, required length.
Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges prepaid with transportation allowed at lowest published rate to all points east of the Mississippi River.

POLYESTER

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices

"Dacron"* Staple and Tow

Denier	Luster	Type	Length	Tow Bundle	1st Gr.
1.25	Semidull	54	1¼"-3"	...	$1.56
1.5	Semidull	54	1¼"-3"		1.51
3.0	Semidull	54	1¼"-4½" & Tow	375M-500M	1.41
4.5	Semidull	54	1¼"-4½" & Tow	375M-500M	1.41
6.0	Semidull	54	1¼"-4½" & Tow	375M-500M	1.41

Terms: Net 30 Days.
F. O. B. Shipping Point—Freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

POLYVINYL ACETATE

American Viscose Corp.

Effective October 1, 1956

"Vinyon"® Staple

3.0 denier	½" unopened	$.80 per lb.
3.0 "	1¼" unopened	.80 per lb.
3.0 "	1¼" opened	.90 per lb.
3.0 "	2" opened	.90 per lb.
3.0 "	2" unopened	.80 per lb.
5.5 "	1" opened	.90 per lb.
5.5 "	3½" opened	.90 per lb.
5.5 "	3½" unopened	.80 per lb.

Terms: Net 30 days.

SARAN FIBERS

The Saran Yarns Company — Odenton, Maryland

The Hall Company (Selling Agent)
41 East 42 Street, New York 17, N. Y. (Oxford 7-8996)
Current Prices:

Saran Staple

Type	Denier	Natural	Colors
2N	22	$0.70	$0.75
2N	16	.74	.79
3Q*	22	.63	.67

In any staple length 1½ to 6". Also 45 denier, 7" cut.
* For carpets and industrial fabrics.

METALLICS

Fairtex Corporation

1808 Liberty Life Building
Charlotte 2, N. C.
January 23, 1958

1. Fairtex No. 260 (butyrate)—gold, silver and copper.

Width	Yield (Per Pound)	Price (Per Pound)
1/120"	21,000	$4.75
1/80"	13,000	4.00
1/64"	10,800	3.35
1/50"	8,400	3.25
1/32"	5,300	3.00
1/16"	2,600	2.85
1/8"	1,300	2.70

2. Fairtex with Mylar* No. 100V (2 ply), (metallized type)—silver only.

1/100"	48,000	$13.25
1/80"	37,000	11.40
1/64"	31,000	10.40
1/50"	24,200	10.15
1/32"	15,500	9.80

Amylose Fiber Prospects

Potential applications of amylose from starch, because of its similarity to cellulose, were discussed by two speakers at a recent one-day conference at Purdue University, Lafayette, Ind., on the chemistry and breeding of high amylose corn.

Paul Kaplan, of Stein Hall & Co., said amylose from starch offered good possibilities as a permanent finish for fabrics; as a binder in the manufacture of non-woven fabrics; as sausage casings and other food wrappers; and for producing water-soluble films to replace more expensive water-soluble polyvinyl alcohol films now on the market. Kaplan said amylose and amylose derivaties in manufacturing films and fibers have been under study for some time. A researcher at T.N.O. in Holland, Kaplan noted, has made fibers from amylose in the laboratory at the rate of 110 meters a minute.

G. N. Richards, of the British Rayon Research Institute, said amylose acetate was at least as suitable as cellulose acetate for films and very probably also for coatings and moldings.

The potential of amylose acetate in the textile field does not appear to be promising, Mr. Richards said, because it will show no significant improvement on acetate rayon. He pointed out also that it is probable that use of acetate rayon will decline in the future. Richards also outlined methods for obtaining low-cost high amylose content starch.

Changes in Enka Research

American Enka Corp. has reorganized its research and engineering division. Francis B. Breazeale has been made director of research. New responsibilities have been given to Dr. Horace Adams, Jr., Donald J. Godehn, Dr. James P. Parker, and Dr. Forestier Walker. Dr. M. Wadewitz, technical vice president, who is in charge of the changes, and said they are being made to achieve greater research effectiveness and to broaden experience for key research personnel as a part of long-range planning. The appointments became effective February 24.

All research activities have been placed under new director of research Breazeale, a former assistant director. He will report directly to Dr. Wadewitz.

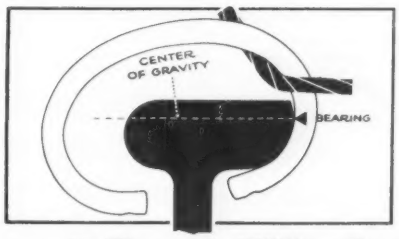
The re-alignment of responsibility establishes four major research departments under the following individuals:

Dr. Adams assumes responsibilities as Manager, synthetic polymer research dept., Mr. Godehn as manager, textile research dept., Dr. Parker as manager, physical research dept., and Dr. Walker as manager, rayon research dept. Each will report to the director of research.

COLOR RICHES
top colorfastness... color beauty...
color uniformity... color versatility
UNLIMITED for fabric, apparel,
home furnishings, everything

COURTAULDS'
COLORAY®
solution-dyed rayon fiber
CAPTIVE COLOR
..."CAN'T ESCAPE!"
COURTAULDS (Alabama) Inc., 600 Fifth Ave., N. Y. 20

You can't afford NOT to investigate the



new "Anti-Wedge"

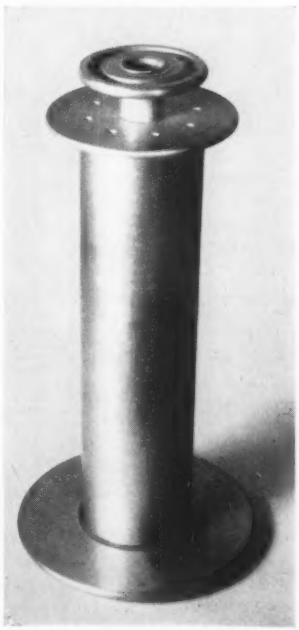
Radical new flange design permits running elliptical travelers at new high speeds because it prevents build-up of fly and wedging or trapping of yarn.

WRITE FOR LITERATURE AND PRICES

WHITINSVILLE (MASS.) SPINNING RING CO.
Makers of Spinning and Twister Rings since 1873
DIAMOND FINISH

Rep. for the Carolinas & Va.: W. K. SHIRLEY, P.O. Box 406, Belmont, N. C.
For Ala., Ga., & Tenn.: P. C. EVERETT, 369 Meadowbrook Dr. NE, Atlanta

N E W



LOW COST ALUMINUM TWISTER BOBBIN

New aluminum twister bobbin of high strength will not warp or fail despite repeated steamings of highest strength nylon yarns. Of two pound capacity, this new bobbin is dynamically balanced and anodized against corrosion yet is less costly than ordinary bobbins. Spindle guide tube goes all the way through. Grip knob with identification ring simplifies handling without need to touch yarn. Available in a variety of sizes. Write for details today.

BW MACK **ALLENTOWN BOBBIN WORKS, INC.**
ALLENTOWN PENNSYLVANIA

Fairtex with Mylar* No. 150V (3 ply), (metallized type)—gold, silver and copper.

1/100"	32,000	$10.65
1/80"	25,000	9.25
1/64"	21,000	8.35
1/50"	16,400	8.20
1/32"	10,500	8.05

3. Fairtex with Mylar* No. 150F, (foil type)—gold, silver and copper.

1/100"	28,000	$7.75
1/80"	21,450	7.00
1/64"	17,200	5.95
1/50"	13,400	5.80
1/32"	8,600	5.65
1/16"	4,300	5.50

4. General Information:
   a. Staple available upon request on above types.
   b. Above types also available supported with Nylon, Fortisan or other synthetics.
   c. Colors available on above upon request at slight additional cost.
   d. Quantity discounts on above prices.
   e. Fairtex is supplied on 1 lb. disposable spools—48 spools per case and on ½ lb. disposable spools—100 spools per case.

Metlon Corp.

Effective January 27, 1958

Metlon*-Mylar** Price List

Metlon F. Mylar (Foil Laminated)

WIDTH	YARDS PER LB. (Plus or minus 5%)	PRICE PER LB. GOLD OR SILVER
1/120"	32,200	$9.80
1/80"	21,500	$7.10
1/64"	17,200	$5.95
1/50"	13,500	$5.80
1/32"	8,600	$5.65
1/16"	4,300	$5.65
1/8"	2,250	$5.65

Standard Colors: 35¢ per pound additional.

QUANTITY DISCOUNTS:
2,000 lbs. — 3%
5,000 lbs. — 5%

To earn discount, quantity ordered must be withdrawn within 90 days from date of order.

TERMS: 1% 10 days, net 30. F.O.B. Providence, Rhode Island. Minimum freight allowed on shipments of 100 lbs. or over.

PUT UP: Plastic Disposable Spools.

Minimum Order—one case (approximately 35 lbs. net).

Smaller quantities subject to surcharge.

PRICES APPLY TO CONTINENTAL U. S. A. AND CANADA.

* Metlon's registered trademark for non-tarnishing metallic yarn.

** DuPont's registered trademark for polyester film.

Reynolds Metals Co.

Reynolds Aluminum Yarns

January 29, 1958

200 Series

	PRODUCT NUMBER	WIDTH	APPROX. YIELDS IN LINEAL YDS. PER LB.	ϕ PRICE PER POUND— 48 THRU 1,999 POUNDS (1) Standard Colors	(2) Special Colors	(3) Non-Standard Colors	(4) Multi-Colors
Acetate-Butyrate	204	1/8"	1,350	$2.80	$3.05	$3.05	$3.05
	204	1/16"	2,700	2.85	3.10	3.10	3.10
	204	1/32"	5,400	3.00	3.25	3.25	3.25
	204	1/50"	8,450	3.25	3.50	3.50	3.50
	204	1/64"	10,800	3.35	3.60	3.60	3.60
	204	1/80"	13,500	4.00	4.25	4.25	4.25
Mylar-Foil	230	1/8"	1,450	$5.60	$5.95	$5.95	$5.95
	230	1/16"	2,900	5.75	6.10	6.10	6.10
	230	1/32"	5,800	5.90	6.25	6.25	6.25
	230	1/50"	9,050	6.05	6.40	6.40	6.40
	230	1/64"	11,600	6.20	6.55	6.55	6.55
	230	1/80"	14,450	7.25	7.60	7.60	7.60
Mylar-Foil	235	1/8"	2,150	$5.35	$5.70	$5.70	$5.70
	235	1/16"	4,300	5.50	5.85	5.85	5.85
	235	1/32"	8,600	5.65	6.00	6.00	6.00
	235	1/50"	13,400	5.80	6.15	6.15	6.15
	235	1/64"	17,200	5.95	6.30	6.30	6.30
	235	1/80"	21,450	7.00	7.35	7.35	7.35
Mylar-Foil	215	1/8"	1,730	$5.30	$5.65	$5.65	$5.65
	215	1/16"	3,460	5.45	5.80	5.80	5.80
	215	1/32"	6,920	5.60	5.95	5.95	5.95
	215	1/50"	10,800	5.75	6.10	6.10	6.10
	215	1/64"	13,840	5.90	6.25	6.25	6.25
	215	1/80"	17,270	6.95	7.30	7.30	7.30

Reymet Staple: Foil Mylar $6.00 per lb.

Metallized Mylar: $10.50 per lb. These can be cut in width to 1/220", also full range of Colors.

(1) Standard Yarn Colors: Silver and Gold.

ϕ (2) Special Yarn Colors: Refer to Products Supervisor, Special Foil Products located at Richmond, Va.

(3) Non-Standard Yarn Colors: Refer to Products Supervisor, Special Foil Products located at Richmond, Virginia.

(4) Multi-Colors: One or two colors.

ϕ Quantity Discounts to be applied on invoice:
5,000 lbs. and over less 5%.
2,000 thru 4,999 lbs. less 3%.

Items can be grouped for quantity price provided each is held to a minimum of 250 pounds. No grouping for less than 250 pounds.

Minimum acceptable orders for standard and special colors is 48 pounds per size and color.

Minimum acceptable order for non-standard colors is 150 pounds per size and color.

AVAILABLE PACKAGES:

Following types available:

Die-cast aluminum spools with straight flange; 3" O.D., 3¼" traverse. Each spool contains approximately 8 ounces of yarn. These spools, billed at $.40 each are returnable for credit in good condition, F.O.B. Reynolds Metals Company, 11th & Byrd Streets, Richmond, Virginia.

No charge returnable plastic spools with 3¼" O.D., 4½" traverse. Each spool contains approximately 1 pound of yarn. These spools are returnable for credit @ $.02 each F.O.B. customer's plant. Subject to inspection and count of seller.

Tin spools with straight flange with 3" O.D., 3¼" traverse. Each spool contains approximately 8 ounces of yarn. These spools, billed at $.10 each are returnable for credit in good condition, F.O.B. Reynolds Metals Company, 11th & Byrd Streets, Richmond, Virginia.

PACKING:

36 spools per corrugated fiber carton, size 18-1/16" x 14-1/16" x 11".

ORDERING DATA:

Specify Product, Width, Color and Type of Spool.

Aluminized Series

PRODUCT NUMBER	WIDTH	APPROX. YIELDS IN LINEAL YARDS PER POUND	PRICE PER POUND 48 THRU 1999 POUNDS
250	1/32"	10,000	$8.05
250	1/50"	15,650	8.20
250	1/64"	20,000	8.35
250	1/80"	25,000	10.25
255	1/32"	15,500	$9.80
255	1/50"	24,200	10.15
255	1/64"	31,000	10.40
255	1/80"	38,700	12.40

250 offered in silver and gold.

255 offered in silver only.

Quantity discounts to be applied on invoice:
2,000 lbs. and over less 3%.
5,000 lbs. and over less 5%.

Sizes can be grouped for quantity price providing each is held to a minimum of 250 lbs.

No grouping for less than 250 lbs. Minimum acceptable order is 48 pounds per item.

AVAILABLE PACKAGES:

Following types available.

Die-cast aluminum spools with straight flange, 3" O.D., 3¼" traverse. Each spool contains approximately 8 ounces of yarn. These spools, billed at $.40 each, are returnable for credit in good condition, F.O.B. Reynolds Metals Company, 11th and Byrd Streets, Richmond, Virginia.

No charge returnable plastic spools with 3¼" O.D., 4½" traverse. Each spool contains approximately 1 pound of yarn. These spools are returnable for credit @ $.02 each, F.O.B. customer's plant. Subject to inspection and count of seller.

Tin spools with straight flange with 3" O.D., 3¼" traverse. Each spool contains approximately 8 ounces of yarn. These spools, billed at $.10 each, are returnable for credit in good condition, F.O.B. Reynolds Metals Company, 11th and Byrd Streets, Richmond, Virginia.

PACKING:

36 spools per corrugated fiber carton, size 15¼" x 14½" x 11".

ORDERING DATA:

Specify Product, Color, Width, and Type of Spool.

Since 1898
Dary Ring Travelers...
THE DARY RING TRAVELER CO.
TAUNTON, MASSACHUSETTS
LINDSEY I. PHILLIPS, Treasurer, Taunton, Mass.
Consult your friendly Dary Representative:
JOHN H. O'NEILL Box 720, Atlanta, Ga.
JAMES H. CARVER Box 22, Rutherfordton, N. C.
CRAWFORD "JACK" RHYMER Box 2261, Greenville, S. C.

Business Service Section

Exclusively for Business, Laboratory and Mill Services; Positions and Men Wanted; Business Opportunities; Mill Properties Wanted or For Sale; Reconditioned Machinery and Equipment, etc.

CLASSIFIED RATES
Per Inch
2 columns to the page, each column 8 inches deep

1	Inch	$8.00
2	Inches	15.00
3	Inches	22.50
4	Inches	28.00
5	Inches	35.00
6	Inches	42.00
7	Inches	49.00
8	Inches	52.00

WE BUY
SURPLUS YARNS
for
EXPORT
any quantities of:
Wool, Cotton, Spuns, Synthetics
and Novelties
KEUROGHLI BROS. INC.
245 Fifth Ave., NYC
MU 3-7891

Here you can
SELL – HIRE – BUY

DACRON, NYLON, RAYON
& ACETATE
BOUGHT AND SOLD
YARNS
BERTNER YARN COMPANY
Empire State Bldg. New York City
Oxford 5-1170

TEXTILE GRADUATE
and
TRICOT KNITTING SPECIALIST

SOUTHERN nylon producer is seeking a man with at least five years' experience to work in customer service and assist with nylon production problems. Must be well qualified in nylon tricot and raschel warping, knitting, and finishing; circular knitting and finishing of nylon for outerwear; and finishing of brushed fabrics. Experience also desirable in full-fashioned and seamless hosiery knitting and finishing and men's half-hose knitting and finishing. EXCELLENT WORKING and living location near Asheville, N. C., adjacent to Great Smokies National Park. Five-day week, liberal benefits program including company-paid retirement plan. Transportation expenses for family and furniture.

Write: Employment Manager, Enka, North Carolina

AMERICAN
ENKA CORPORATION

RESEARCH AND DEVELOPMENT
OPPORTUNITIES IN
SYNTHETIC FIBERS

The following positions, offering real growth potential for research minded men with ability, are available at our Stamford, Connecticut Laboratories.

TEXTILE ENGINEERS—Responsible position for man with three to five years experience in synthetic fibers. Should have thorough knowledge of textile processing, fiber, yarn and fabric properties. Textile engineering degree desirable.

TEXTILE CHEMIST—Two to six years experience in knitting and weaving of synthetic fibers—particularly filament yarn.

CHEMIST OR CHEMICAL ENGINEER—Experienced in wet, melt or dry spinning.

DESIGNERS—B.S. Engineer with minimum of three years experience in designing fiber spinning equipment.

POLYMER CHEMISTS—Experienced chemists interested in either vinyl or condensation polymerization.

MICROSCOPIST—Male or female with fiber experience to plan work in application of microscopic techniques to research and development of fibers.

Please send resume to:

D. W. Clark, Placement Coordinator
Stamford Research Laboratories
American Cyanamid Company
1937 West Main Street, Stamford, Connecticut

TEXTILE INSTRUCTORS
Full-time; part-time; college in New York City. Degree and appropriate industrial experience desired. Resume of education and trade background requested.
Box 785, Modern Textiles Magazine
303 Fifth Avenue New York, N. Y.

DACRON — NYLON — RAYON
AND ALL OTHER YARNS
BOUGHT & SOLD
The Yarn Exchange Co.
358 Fifth Ave., N. Y.1, N. Y. BRyant 9-9288

You can be sure to hit your sales target in 1958, when you beam your sales message in MODERN TEXTILES Magazine

Calendar of Coming Events

Apr. 2—AATT monthly meeting. Della Robbia Room, Vanderbilt Hotel, New York, N. Y.
Apr. 10-11—Cotton Merchandising Research Clinic, annual meeting. Austin, Texas.
Apr. 10-12—American Cotton Manufacturers Institute annual meeting. Hollywood Beach Hotel, Hollywood, Fla.
Apr. 16-18—Alabama Textile Manufacturers Assoc. annual meeting. Hotel Buena Vista, Biloxi, Miss.
Apr. 19—Textile Operating Executives of Georgia. Georgia Institute of Technology, Atlanta, Ga.
Apr. 21-22—NAHM annual meeting and Hosiery Industry Conference. Hotel Roanoke, Roanoke, Va.
Apr. 23—The Textile Institute annual meeting. Nottingham, England.
Apr. 23-26—Cotton Manufacturers Assoc. of Georgia. Boca-Raton Hotel, Boca Raton, Fla.
Apr. 24-26—Phi Psi Textile Fraternity annual convention. Philadelphia, Pa.
Apr. 28-30—Narrow Fabrics Institute spring meeting. Sedgefield Inn, Greensboro, N. C.
Apr. 29-30—Institute of Textile Technology, Charlottesville, Va. Meetings of Technical Advisory Committee and Board of Trustees.
Apr. 30-May 1—The Fiber Society spring meeting. Clemson House, Clemson, S. C.
May 1—Underwear Institute annual meeting. Hotel Biltmore, New York, N. Y.
May 2—The Drysalters Club of New England spring dinner. Hotel Vendome, Boston, Mass.
May 3—The Alabama Textile Operating Executives spring meeting. Thach Auditorium, Auburn, Ala.
May 6—Canadian Textile Conference. Queen Elizabeth Hotel, Montreal, Que.
May 7—AATT monthly meeting. Della Robbia Room, Vanderbilt Hotel, New York, N. Y.
May 19-24—National Cotton Week.
Jun. 4—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
Jun. 4-7—Tufted Textile Manufacturers Association annual meeting. Daytona Beach, Fla.
Jun. 9-12—Materials Handling Exposition. Public Auditorium, Cleveland, Ohio.
Jun. 19-21—Southern Textile Association annual convention. Grove Park Inn, Asheville, N. C.
Jun. 22-27—ASTM annual meeting. Hotel Statler, Boston, Mass.
Jul. 20-23—Textile Merchants and Associated Industries Exhibit. Sheraton-Jefferson Hotel, St. Louis, Mo.
Sep. 3—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
Sep. 9-10—The Fiber Society, Inc. Montreal, Can. (Meeting place to be announced.)
Sep. 11-12—Combed Yarn Spinners Association annual meeting. The Cloister, Sea Island, Ga.
Sep. 25-26—Northern Textile Association. Wentworth-by-the-Sea, Portsmouth, N. H.
Oct. 1—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
Oct. 1-2—National Cotton Council, Chemical Finishing Conference. Washington, D. C.
Oct. 6-10—Southern Textile Exposition. Greenville, S. C.
Oct. 11—Textile Operating Executives of Georgia. A. French Textile School, Atlanta, Ga.
Oct. 14-17—ASTM Committee D-13 on Textiles. Sheraton-McAlpin Hotel, New York, N. Y.
Oct. 15-25—International Textile Machinery Exhibition. Belle View, Manchester, England.
Oct. 25—Alabama Textile Operating Executives fall meeting. Thach Auditorium, Auburn, Ala.
Oct. 30-Nov. 1—AATCC National Convention. Hotel Conrad Hilton, Chicago, Ill.

Index to Advertisers

(*See previous or subsequent issues)

Abbott Machine Co. Inc.
Allentown Bobbin Works, Inc. 93
Allied Chemical & Dye Corp.
National Aniline Div. 39, 42, 43
Nitrogen Division
Solvay Process Division 9
American Aniline Products, Inc.
American Bemberg 13
American Enka Corp. 27
American Lava Corp. IV Cover
American Viscose Corp.
Antara Chemicals Div. General Dyestuffs Corp.
Apex Chemical Company, Inc.
Arkansas Co., Inc.
Atlantic Rayon Co.
Atlas Electric Devices Co. 80

Barber-Colman Co. 22
Booth, Benjamin Co.
Borregaard Co., Inc., The 85
Butterworth & Sons Co., H. W. 53

Carter, A. B., Inc.
Celanese Corp. of America, Yarn Div. 23
Ciba Company, Inc. 20, 21
Chemstrand Corp. 25
Cocker Machine & Foundry Co. 24
Collins Supply and Equipment Co. 89
Columbia-Southern Chem. Corp. 50, 51
Corn Product Sales Co. 16
Courtaulds (Alabama), Inc. 93
Curlator Corp.
Curtis & Marble Co. Machine

Dary Ring Traveler Co. 94
Davison Publishing Co.
Dayton Rubber Co., The 4
Denman Textile Rubber Co. 19
Dobson & Barlow, Ltd.
Draper Corporation
Du Pont de Nemours & Co., E. I.
Dyestuff Department
Textile Fiber Department 14, 15
Film Department

Eastman Chem. Pro. Inc.
Engelhard Industries, Inc.
Baker Platinum Div.

Fabulized, Inc. 29
Fancourt Co., W. F. 29
Firestone Tire & Rubber Co.
Fiske Bros. Refining Co. 79
Fletcher Works Inc.
Foster Machine Co. 48
Franklin Process Co. 32

Gaston County Dyeing Machine Co.
Geigy Chemical Corp. 55
General Dyestuff Corp.
Gessner Company, David
Globe Dye Works Co.

Hart Products Corp.
Hartford Machines Screw Co.
Hartford Rayon Co., Div. of Bigelow-Sanford Carpet Co., Inc. 6
Heany Industrial Ceramic Co. 8
Heresite & Chemical Co. III Cover
Herr Mfg. Co., Inc. 28
Hoffman & Co., Inc., Arnold
Hoffner Rayon Co. 91
Howard Bros.

Ideal Industries, Inc.
Industrial Rayon Corp. 10, 11
Interchemical Corp.

Jacobs, E. H., Northern & Southern Division 91
Johnson Corp., The

Kenyon Piece Dyeworks, Inc. 64
Kidde Manufacturing Co., Inc.

Lambertville Ceramic & Mfg. Co. 85
Laurel Soap Mfg. Co. 89
Leatex Chemical Co.
Lindly & Co., Inc. 79
Loper Company, Ralph E. 85

Malina Company
Metlon Corp.
Miller Corp., Harry
Milton Machine Works, Inc.
Mitchell-Bissell Co. 61

National Drying Machinery Co.
National Ring Traveler Co.
National Starch Prod., Inc. 57
National Vulcanized Fibre Co.
Lestershire Spool Div.
New Departure, Div. of Gen. Motors
New York & New Jersey Lubricant Co. 87
Nopco Chemical Co. 30

Olin Mathieson Chem. Co.
Onyx Oil & Chemical Co. 3

Page-Madden Co., Inc.
Penick & Ford, Ltd.
Perkins & Son, Inc., B. F. 45
Proctor & Schwartz, Inc.

Reliable Sample Card Co., Inc.
Reynolds Metals Co.
Riordon Sales Corp., Ltd. 18
Roberts Company 7

Saco-Lowell Shops 26
Sandoz Chemical Works, Inc.
Saran Yarn Co.
Sayles Finishing Plants, Inc.
Scholler Bros. 49
Scott & Williams, Inc. 47
Scott Testers, Inc.
Simco Co., Inc.
Sonoco Products Co. II Cover
Southern Shuttle Div., Steel Heddle Mfg. Co. 31
Standard Chemical Products, Inc.
Stauffer Chemical Company
Steel Heddle Mfg. Co. 31
Stein Hall
Synthane Corp.
Synthetic Yarns, Div. D. W. Rich & Co., Inc.

Textile Banking Co.
Textile Hall Corp.
Titanium Pigment Corp.
Traphagen School of Fashion
Trumeter Co.
Turbo Machine Co.

Union Carbide Chem. Co.
Div. Union Carbide Corp.
Chemical Dept.
Textile Fibers Dept.
U. S. Ring Traveler Co.
U. S. Textile Machine Co.
Universal Winding Co. 12

Verona Dyestuffs
Victor-Ring Traveler Co.
Von Kohorn International Corp.

Wallerstein Company, Inc.
Walton & Lonsbury 83
West Point Foundry & Mach. Co.
Whitin Machine Works 17
Whitinsville Spinning Ring Co. 93

BUSINESS SERVICE

The Yarn Exchange, Inc. 95
Bertner Yarn Co. 95
Keuroghli Bros. Inc. 95
American Cyanamid Co. 95

HERESITE

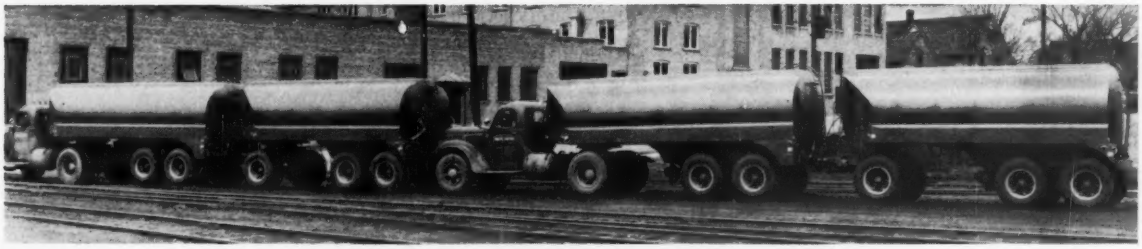
REG. U. S. PAT. OFFICE

LININGS FOR TANK CARS AND STEEL TANKS

Part of the 350 HERESITE lined tank car fleet in sulphuric acid service by Tennessee Corporation—Courtesy of Tennessee Corp.

RESISTANCE—HERESITE linings effectively prevent product contamination of such items as Sulphuric Acid, Rubber Latex, Formaldehyde, Battery Acid, Lactic Acid, Acetic Acid. These products will be delivered free from iron pickup.

EASE OF CLEANING—HERESITE lined tank cars are quickly cleaned by Steaming, Hot Water, or any type of Solvent Wash.



HERECROL

REG. U. S. PAT. OFFICE

SYNTHETIC RUBBER LINING

The strongest caustic alkali solutions, as well as the halogen acids and other chemicals, may be transported in a HERECROL lined tank car or trailer tank. Our literature will interest you Write for it today.

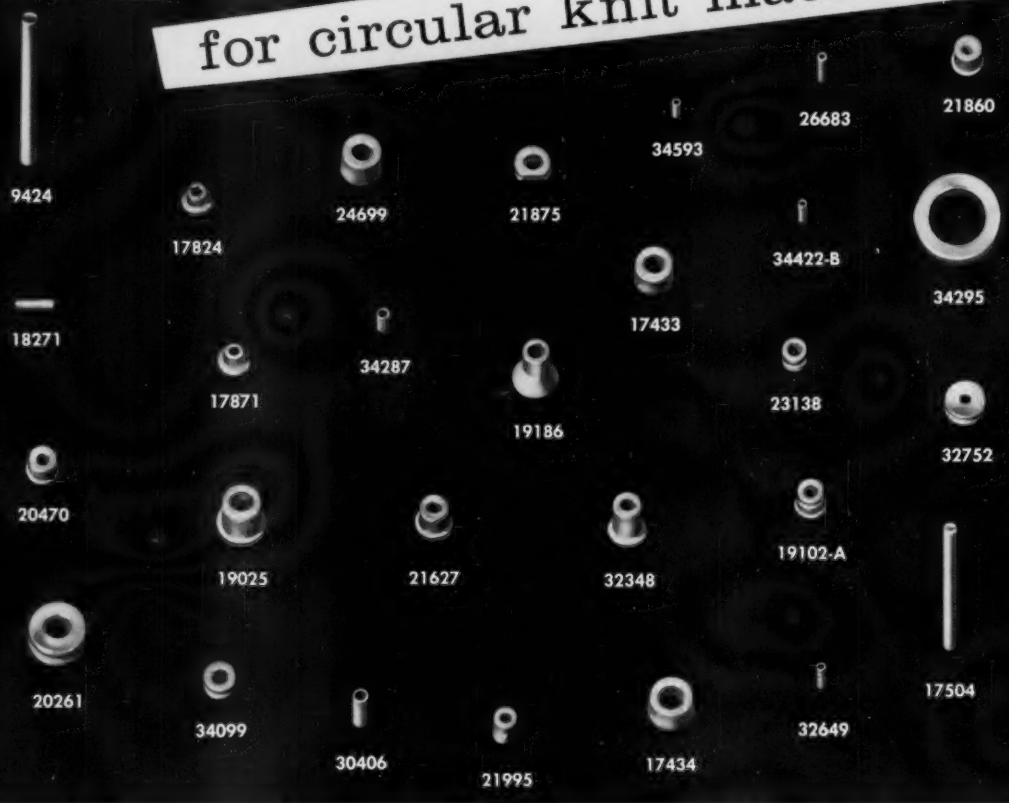
HERESITE & CHEMICAL COMPANY

MANITOWOC, WISCONSIN

Eastern Division: 546 South Avenue, Garwood, N. J.

ALSIMAG 192 *Guides*

for circular knit machines



NOTE: These standard AlSiMag Rings are available in various thicknesses; weights in proportion.

You get all these advantages with ALSIMAG guides

LONG LIFE. This very hard, smooth material is homogeneous, thus has no rough underbody.

FEWER REPLACEMENTS. Extra long life of AlSiMag guides means less down time, less labor costs.

BETTER QUALITY. Your product is better because these guides help attain uniform tensions. You also eliminate yarn damages which sometimes resulted from undetected guide failures in old type guides that had a smooth surface and a rough underbody.

UNIFORMITY. AlSiMag guides are uniform dimensionally and physically, from guide to guide and from lot to lot. This speeds installation, helps you to attain UNIFORMLY high quality in your product.

LIGHTER TENSIONS. AlSiMag guides are available in controlled finishes.

STATIC CONTROL. Where static is a problem, AlSiMag guides can be supplied in AlSiMag 193 which is identical to 192 except that 193 is electrically conductive.

PROMPT DELIVERY. Ask us about test samples.

A Subsidiary of Minnesota Mining and Manufacturing Company

AMERICAN LAVA CORPORATION

CHATTANOOGA 5, TENN.
57TH YEAR OF CERAMIC LEADERSHIP

SALES ENGINEERS: NEW ENGLAND: W. J. Geary, 27 Fairlawn St., Cranston, R. I., Williams 1-4177. NORTHEAST: J. S. Gosnell, 205 Walnut St., Livingston, N. J., 6-1260. SOUTHEAST: James W. Crisp, 409 Buncombe St., Apt. 9, Greenville, S. C., Cedar 9-8520. ALL OTHER AREAS: J. B. Shacklett, American Lava Corp., Chattanooga 5, Tenn., Amherst 5-3411. REPRESENTATIVES: CANADA: Ian M. Haldane & Co., P. O. Box 54, London, Ont. ALL OTHER COUNTRIES: Minnesota Mining & Mfg. Co., International Div., St. Paul 6, Minn.